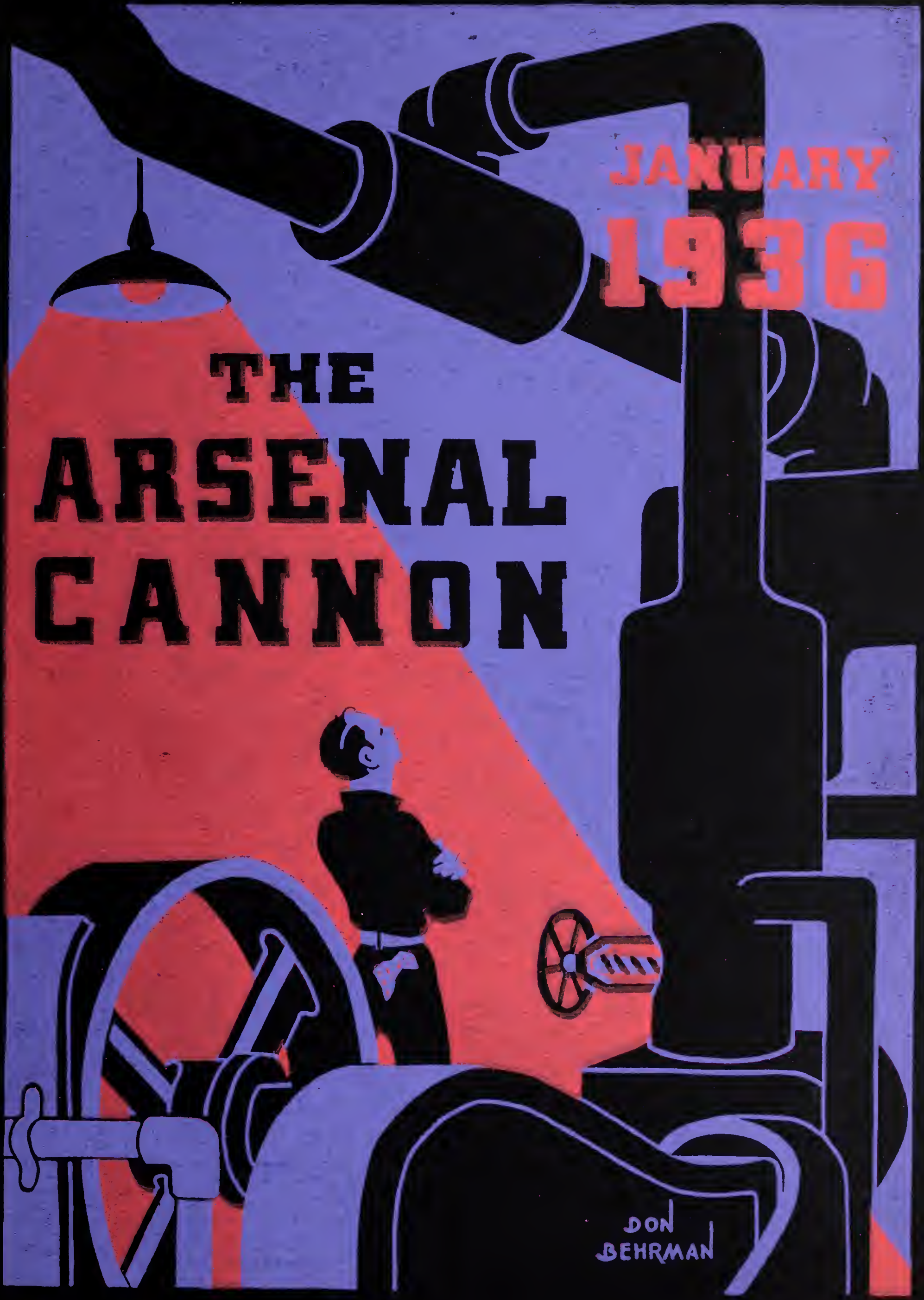
THE ARSENAL CANNON

JANUARY 1936



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The ARSENAL CANNON

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THE
ARSENAL
TECHNICAL
SCHOOLS

INDIANAPOLIS, INDIANA

January 1936

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VOCATIONS

Through Vocational Training, Pupils Prepare Themselves for Purposeful Careers.

Owing to the rapid advancement of civilization and a growing need for skilled craftsmen, the Technical High School of yesterday with its few vocational courses has become the Arsenal Technical Schools of today, made up of the twenty-two vocational schools and the Technical High School. Here are schools in which subjects necessary for almost any phase of vocational training for which there is a local demand are taught, with courses in general and vocational shops arranged to train both boys and girls.

These vocational courses have been included in the curriculum to meet the needs of those boys and girls whose opportunities for academic training and even graduation are uncertain. The pupils are given an opportunity to study some definite line of work that appeals to their interests and abilities. A complete course in almost any desired trade is offered in a carefully organized vocational program. In addition to these special vocational courses a variety of suitable supplementary subjects is offered. Most of the vocational shops are taught in a special building, the New Shop Building, where the noise of the machines cannot disturb other classes. Other shops are held in suitable rooms in various buildings on the campus.

Besides the regular academic program the Arsenal Technical Schools offer three distinct types of training. The first type, the prevocational or industrial arts course, is planned to aid the pupil in his selection of a suitable vocation which will best meet his individual needs. Even though the pupil does not definitely decide to make his program a vocational one, the valuable knowledge obtained from these practical prevocational courses is beneficial. A pupil elects industrial work for one of three reasons: either to prepare himself to enter an engineering college, to complete a regular vocational course, or merely to enrich himself with the general knowledge secured from such a course.

Owing to the great variety of courses offered, the convenient groupings of the shops facilitate the rotating practice of the shop classes. The metal crafts and building crafts classes together form a main course known as General Shop Pupils who sign up for either of these courses study six different shops, spending nine weeks in each of the following subjects. In Metal Crafts courses such as forge, foundry, automobile, machine, pattern making, and sheet metal shops, a general course in welding is included with the regular classwork. In the Building Crafts division are the cabinet making, carpentry, cement, electrical, plumbing, and painting and decorating shops. Pupils electing both groups may spend three years in industrial arts or prevocational work.

Vocations are the second of the three types of training. From a general course the pupils enter into a detailed study of one trade. Although following vocational lines of work, the pupils select suitable subjects to complete their daily program. With a vocational course, related work and mechanical drawing are required. With the advice of the sponsor teacher and some representative of the Shop department one academic subject is included with the hope of stimulating in the individual an interest in and a desire for broader training. By a careful selection of subjects vocational pupils may follow their chosen vocation and still meet all requirements for graduation from the Technical High School.

In addition to the two types of work offered by the vocational division of the school, a third type is offered by the Technical High School. In this the courses are highly specialized and technically advanced. They are, for the most part, advanced classes in the regular shop courses. Specialized training is offered in commercial art, machine drafting, architectural drafting, commercial work, dressmaking, millinery, vocational music, mill work, ground mechanics, and radio. Mechanical drawing, offered in the Drafting department, supplements the program of the vocational pupil. General Shop pupils are earnestly advised to select this subject to complete their programs as experience in both the drawing room and shop makes an invaluable combination and background for future work.

Special talents may also be developed in the following subjects: furniture repair, general repair work, landscaping, and gardening. Vocal or instrumental music talent may be developed in courses offered by the Music department. The vocational music pupil devotes four periods each day to his work in any of four phases which include directing choruses, orchestras, and bands, besides a course in accompaniment.

At the close of each school year special exercises are held for the formal presentation of

(Continued on page 6)

Building Crafts

The Building Crafts department includes the following shops: Cabinet Making, Painting and Decorating, Cement, Plumbing, and Carpentry.

Wall shelves, corner shelves, picture frames, and many other small ornamental objects are projects of the Cabinet Making Shop which may well be called "Tech's Furniture Shop." Those boys who wish training beyond the elementary course in woodworking are given the opportunity to combine all their knowledge in the finishing of artistic furniture—the projects mentioned above. After suitable knowledge and skill in the use of hand tools have been attained, the boys are taught the use of woodworking machines.

Wood turning, that branch of woodworking in which the round parts of the furniture are made on a lathe, is taught to the pupils to help them emphasize the graceful lines of their well-designed projects. Many ornamental and useful objects are turned out in this fascinating field of the cabinet maker's trade.

While practical and valuable experience is gained every semester by pupils of cabinet making, the numerous projects fit into the boys' homes. These projects are made from a variety of suitable woods, which are studied, and those best adapted for the purpose are selected for use.

Consideration of the various kinds of construction and the utility of the desired project, plus careful craftsmanship, make projects of which any boy may be proud.

The knowledge and training gained in this course are such that they may be adapted to many fields of work as well as to cabinet making. In addition, the course is beneficial as it stimulates in each pupil a sense of responsibility and self-reasoning.

Through special classes in Related Work the boys learn the essential technical details directly parallel to the shop. These include mathematics, science, and hygiene, besides the study of materials and other details that are necessary to develop better tradesmen.

Cabinet Making is a two-year vocational course in which the classes meet four periods daily.

Any boy selecting a vocational course in Carpentry, like any other vocational boy, has had an opportunity to try out other courses before making his selection. If he chooses Carpentry, he is naturally interested in the subject. His entire work is made to parallel, as nearly as possible, the experience and conditions that he would meet in the building industry of the outside world. In addition to the actual trade experiences, the very best construction methods are used. The various jobs that the boys do are kept modern and up-to-date because the instructors keep in close contact with the building industry of Indianapolis.

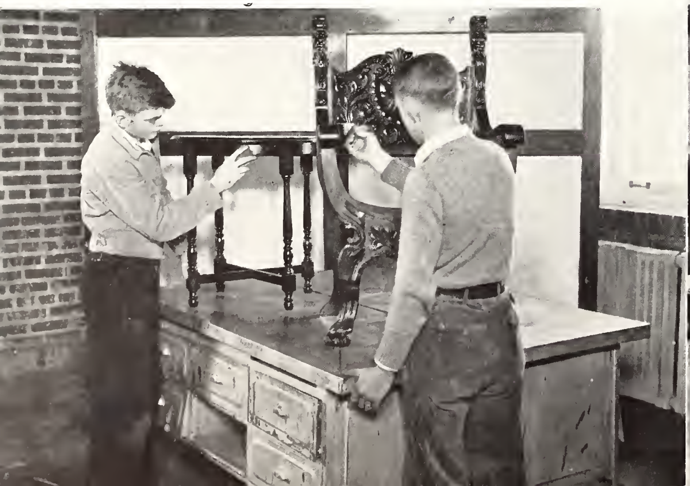
Carpentry can be roughly divided into two divisions—framing and finishing.

The framing is the rough construction of the house—making the rough timber into walls, floors, ceilings, stairways horses, rafters, the lining, sheathing, and the roof covering.

The finishing includes all the exterior decorations—the siding, the stairway treads, risers, and handrails, and all the interior woodwork such as the hanging of doors and the casing of openings, the installation of the window sash, and all cabinet work.

To begin with, the Carpentry boy's work is largely done on model houses. In this manner he becomes acquainted

PAINTING AND DECORATING



CABINET MAKING

CEMENT SHOP

PLUMBING

with the technical and trade terms of house building, the various kinds of tools, and introductory construction methods. Stress is placed upon the fundamentals of good carpentry practice. Of course, during this early training, the pupil learns the standard dimensions of lumber and the manner in which to do the measuring. He progresses from the model house to work on the full dimension house. Then he begins to make measurements and construction in full sized details exactly as he would on any house being built for someone in which to live. This work is helping with the framing of the house, such as cutting, studding, floors, and ceiling joists, headers, and fire-blocks. His work progresses in a series of sequences which gradually become more difficult and require more expert skill.

The latter part of the course is spent on doing the exterior and interior finishing. The siding is put on very carefully and nailed in such a manner that it can be easily removed. In the three full-sized houses that have been completed, the construction work has been such that many favorable criticisms have been made.

The regular shop class is four periods in length. In addition, a fifth period is assigned in which Related Work is taught. This course is planned to coordinate the theoretical and instructional portion of carpentry with the actual construction. The carpenter should be able to use a great deal of mathematics, mostly arithmetic. The special mathematics is taught in this extra period. Also the proper lumber for special uses is discussed. The problems that are at hand in the house building are considered.

This course was begun in the fall of 1915 in a room that is now occupied by the new lunch room. This was the first class to be held on the first floor of the Artillery Building. That room had the old perpetual motion machine in it and school room equipment, all of which the boys had to move before class work was begun. Nearly four weeks were spent in cleaning it. Later, the class was moved into Room 29 where the large model house is now built each year. From there it was moved upstairs to Room 33 where it stayed for five years. This room being small, the house built those years had to be constructed half size. Six years ago two additional rooms were given to the Building Crafts department. The Carpentry class moved back to Room 29 where it is at the present time.

The Cement Shop is either a two-period or four-period course, according to the ambitions of the boy and the objective of his goal.

The objectives of this course are to give the pupil some knowledge of the various kinds of concrete mixtures and the possible uses of each, to acquaint the pupil better with a product that is growing in importance in the industrial world today, to study the most important types of concrete work, and to give the pupil some actual experience in the mixing, placing, finishing, and curing of concrete for various uses.

All of the projects are made with a dry mixture; and as far as possible, cast iron molds are used. Each year the Cement Shop concretes the floor in the little house in the Carpentry Shop. This house is constructed solely for the purpose of giving actual practice to the boys in shop work.

The Cement Shop makes a variety of things during the semester, such as stepping stones, small and large flower boxes, bird baths, sun dials, garden benches, pedestals for their bird baths, urns, end tables, baseball plates, lawn rollers, clothesline posts, door weights, and a multitude of other projects.

Increased building programs have increased the demand for properly trained plumbers, and the response to the advantages offered in the Plumbing Shop of Tech show

CARPENTRY

that the modern boy is alert. Increased interest has been shown in plumbing, and the facilities for practice have been improved to give the pupil more practical training than in former years.

When visiting the Plumbing Shop in the basement of the Barracks, one finds the boys busily engaged in pipe fitting, studying methods of installation which include roughing in soil, waste, and vent pipes, installing fixtures for building frames which are similar to the bathrooms in apartment buildings, bungalows, common residences, and dressing rooms.

One of the most recent projects is a plumbing installation on the order of those offered in the remodeling program of the Federal Housing Act. When the fixtures are installed in these jobs, the installations undergo a rigid inspection, being operated on the same principle as those installed in the building trades of Indianapolis.

The work in plumbing offered at Tech consists of a two-year vocational course with related subjects and an advanced technical course with the related subjects of physics or chemistry. Like any other course offered, the pupil may gain more or less from his training according to the interest and industry he has shown.

At the completion of this course, his ability should equal that of an apprentice plumber of two years' training.

A new course called Painting and Decorating, which is an outgrowth of a course called Wood and Metal Finishing, is now being introduced to vocational shop pupils.

There has developed a need for training in painting as practiced in the building industry. Through conferences with master painters and tradesmen, it was learned that this demand merited serious consideration. So the new course is now being carefully organized to meet the very latest needs.

At present there is no vocational class in painting and decorating. However, there are a large number of industrial arts boys working in this shop.

At the beginning of this course, boys are first taught to stain, fill, and finish new pieces of furniture. Then they are taught how to mix oil paints, beginning with a base of white lead. This work is very extensive when carried out to its full extent, and is emphasized throughout the entire four semesters.

As the course progresses, the teaching of refinishing and painting of furniture, hanging wall paper, cutting stencils, and all sorts of hand brush work are stressed. It is hoped that these boys will acquire considerable skill as well as technical information in the trade. It is the purpose of this course to train boys who are interested to such an extent that they might make suitable candidates for apprenticeship in the painting and decorating trade.

In the first painting course at Tech, the finishing and painting of metal was emphasized, particularly the repainting of automobiles. Wood finishing and furniture refinishing have developed rapidly. The quality of the work has become so widely and favorably known that for the past five semesters many requests for refinishing could not be granted. Numerous pieces of fine old furniture and valuable antiques have been entrusted to the classes for repair and refinishing.

Although it will not be expected, as in any other vocational courses, to turn out skilled workmen, it is possible to give these boys fundamental and basic training which will be of inestimable value to them. First of all they have a chance to experiment in this work; then, if they like it, they can specialize in it.

VOCATIONS

(Continued from page 3)

the vocational certificates which signify that the pupils have completed their two-year vocational course and have fulfilled all requirements. To receive this certificate eight credits must be earned in one vocational subject, two credits in related work, two credits in mechanical drawing, and two credits in unrelated subjects such as English, mathematics, or social studies. The certificates are signed by the superintendent of schools, the principal of the high school, and the head of the Vocational division.

The Arsenal Technical Schools with their many buildings and a seventy-six-acre campus offer an excellent outlet for the talents of pupils. By taking advantage of these opportunities, pupils find it possible to make the best of their talents and train themselves for practical, worthwhile vocations.

Metal Crafts

The Metal Crafts department includes the following shops: Pattern Making, Forge, Sheet Metal, Machine, and Foundry. Included in the work in these shops is the study of general welding.

Almost every industrial course demands some knowledge of general welding. Unexpected emergencies make it imperative that vocational boys acquire some knowledge and practical experience in this line of work. In the courses where this need is recognized special instruction is given in brief courses in general welding. In all these courses instruction in welding is combined with the regular class work.

General welding comprises a large part of the work of the advanced class in Forge Shop. The work consists chiefly in practicing elementary principles of brazing and welding until, in the third and fourth semesters, the work on special projects is introduced. Welding and brazing are a natural accompaniment to Forge Shop which deals with iron and other metals. Only boys in the advanced classes may devote time to this branch of work, however, and make a detailed study of welding. Many useful and artistic articles are made by these advanced pupils in connection with their regular work. Fireplace equipment including andirons and pokers are projects of the class. Candlesticks, lamps, tables, and racks are additional projects. All of these articles are very useful and practical; they also add to the beauty and comfort of any home.

Before the boys in the Metal Crafts division rotate into the Sheet Metal Shop, they spend a few days in a welding class. The purpose of this class is to acquaint the boys with the basic principles of soldering and welding. This work also enables the pupils to complete jobs in their special vocation, besides giving them invaluable experience to add to the broad, general education secured in the shop courses. Short as this course is, it prepares the boys for unexpected emergencies in which a knowledge of welding is essential. When the boys enter the Sheet Metal Shop, they have acquired sufficient knowledge of soldering and welding to meet all requirements of the new class.

An entirely different kind of welding is offered in the advanced Ground Mechanics course. As the work deals with air craft, all materials are necessarily light. In this course, too, very little time is spent with welding practice, but enough training is derived from the actual experience obtained in class to enable the boys to use this knowledge when needed. Only pupils taking Ground Mechanics II receive any instruction in welding.

The Sheet Metal trade is one of the most essential of modern industries. In order to take sheet metal training at Tech a pupil must be enrolled in General Shop I. This course, open to all freshman boys, covers a period of two years. Actual shop practice in the construction of sheet metal objects is part of the class work. Tech has a very well equipped high school shop.

Due to the excellent equipment a boy learns all of the operations involved in common sheet metal work and sheet metal pattern drafting. Parallel line development which is the simplest form of work using only parallel lines is the first step learned in pattern drafting. The next steps are radial line and triangulation work. The first of these takes up the use of lines which flare out from the center as do the radii of a circle; triangulation work is a pattern in which all of the lines form triangles. No matter which method of development is used, a full-size picture of the pattern must first be drawn on paper. It is then transferred from the paper to metal by means of a prick punch. The metal is then cut, and the parts assembled. The process of cutting and shaping the metal teaches the pupils the use of all the shop equipment.

Simple articles using parallel lines are made in the elementary classes, such as pipe intersections, quart measures, pails, cups, boxes, and funnels.

The advanced work is made up principally of problems

GENERAL WELDING

PATTERN MAKING

that involve the use of triangulation with some radial and parallel development, such as skylights, ventilating, and blow pipe work.

This course is not only beneficial to a pupil planning to go into the trade, but much is to be gained by all pupils. They become familiar with the machinery, tools, and terms of the trade. They develop perseverance and keen judgment, and finally they become more intelligent consumers of sheet metal goods.

Divided into four semesters of work, each semester representing a different phase, the Machine Shop course at Tech is planned in accordance with the abilities of the pupils.

During the first semester the boys work for a period of three weeks in each of the following shops: Forge, Foundry, Pattern Making, Sheet Metal, Machine, and Auto. This work enables them to select the shop for which they are best fitted. They also gain valuable knowledge and an insight into and appreciation of the other trades.

In the second semester of Machine Shop special stress is laid on the fundamental operations of the trade of which taper turning and thread and gear cutting are outstanding examples. Taper turning is primarily turning a piece of metal from a large to a small diameter, and is used in many tools of this trade. Thread cutting is the process of cutting threads on bars of metal as on screws and bolts.

The pupil learns the principles of gear cutting by the formed cutter methods on the milling machine. When possible, the gears are used to repair machines in the various shops.

In the third semester of the work the pupils begin making small tools. The tools are the kind used in their trade and save the pupils buying them in later years. These tools consist of hammers, clamps, vises, jacks, and many others.

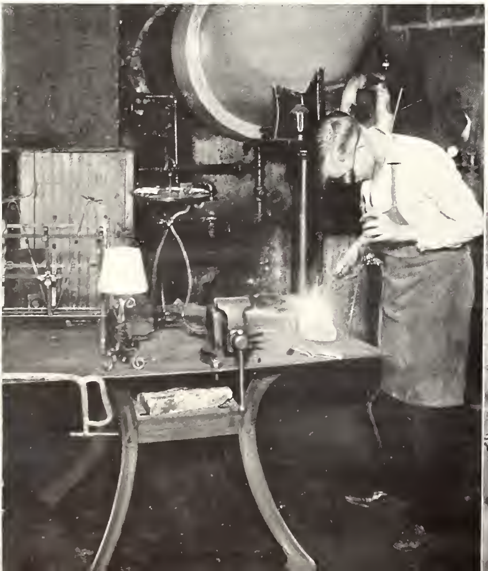
In the fourth semester the work is given over to the maintenance and repair of machine parts from the power plant and shops here at Tech. Tool making, which is also featured at this time, consists of making tools of various sizes and shapes for any purpose. Dies are special shaping and cutting tools used for making such articles as typewriter, radio, and automobile parts. The Tech traffic badges and many parts used in the Public Address System are made with dies fashioned by the boys in the die-making classes. The fundamentals of tool and die-making are taught to enable the pupils to enter this industry with advanced standing as an apprentice.

Through the coordination plan the graduates who receive a vocational certificate at the end of their course are placed in positions best suited to their talents. This plan, which has recently been organized, is as follows: The shop teachers make regular visits to manufacturing plants to study the needs of their industries and to place the boys who have finished the shop courses in these various trades.

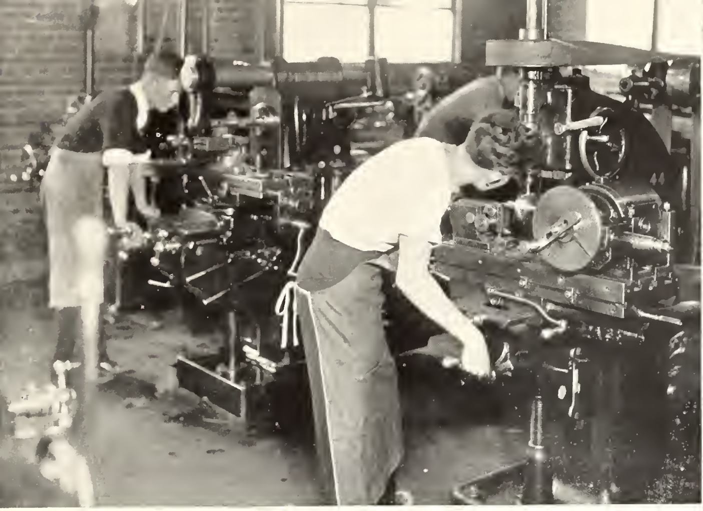
If, after the three weeks spent in foundry work in the General Shop IM Vocational course, the pupil desires more foundry work he may take three more semesters. Then, having completed these three semesters and desiring still more work along this line, a pupil may enroll in a course known as Advanced Shop Practice in the Foundry for four more semesters. In this way, in seven semesters and three weeks, a pupil may acquire quite a complete knowledge of foundry work.

Although the three weeks in General Shop and the three semesters in Foundry consist of four periods of labor daily, it is time well spent. The experience gained and the practical knowledge obtained would prove invaluable in a commercial foundry after graduation. The first two semesters

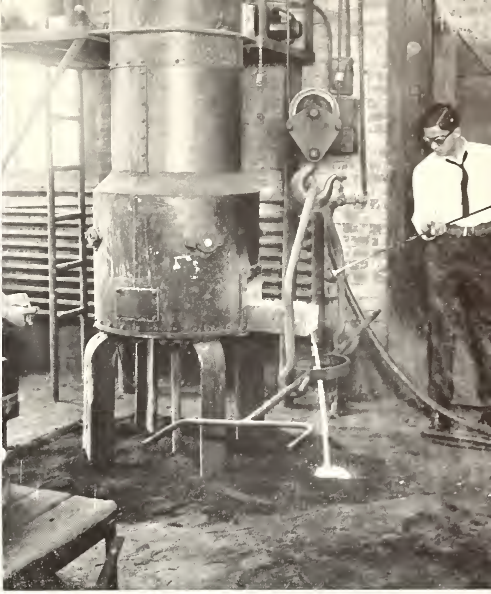
FORGE-WELDING



SHEET METAL SHOP



MACHINE SHOP



FOUNDRY

in Advanced Shop Practice in Foundry involve only two periods of this work each day; the other two semesters, however, include four periods daily.

Practically all of the articles completed are made for use in other departments of Tech. For instance, in Auto Shop the standard upon which rests a partially dissembled automobile for use in teaching is a product of the Tech Foundry. Other completed projects of this shop include anvil bases and post tops for fences.

The pupils in the Advanced Shop Practice course mold castings, as they are called, which are the exact type as those made in commercial foundries. In this way, a pupil is taught to make the things which he would be called upon to cast if employed in a commercial foundry.

For a boy whose major interest leans toward the making of useful as well as artful articles, he finds sheer delight in the Tech Forge Shop. Many interesting and worthwhile projects are carried on in this comparatively small shop, located in the basement of the Shop Building.

Here six classes are held daily, including General Shop IM, IM Vocational, Forge Shop II, III, IV, and Advanced Shop Practice. It's a small room filled with machines of every size where the boys are industriously working.

Many projects are completed in this interesting place. Useful articles such as fireplace sets, andirons, fireplace screens, magazine racks, smoking stands, fireplace cranes, toasting forks, and flower pot stands are made by the pupils. Boys in General Shop make their time profitable by learning and practicing the bending of metals, heat treating, tool making, welding, benchwork, laying out of projects, filing, riveting, and drilling.

The boys generally select General Shop IM or IM Vocational before taking the Forge Shop course, but there are no prerequisites.

This two-year course is equal to a three-year straight apprenticeship in an outside shop and prepares the boys for their future work.

Cooperating with nearly every department in the school, the Pattern Making shop offers a purely vocational course to its pupils. Patterns for the casting of much of the important metal equipment of the school are prepared by these pupils.

This shop, although a branch of the Metal Trades, is a woodworking trade. Although the pattern-maker uses the same tools as the cabinet-maker, he must have a thorough knowledge of the molding and the shrinkage of the various metals.

Patterns are sent to the school Foundry, there to be molded and cast in metal and to be turned out a finished product.

The pattern-maker must be able to read and understand blue-prints; frequently, he is called upon to make a full-size mechanical drawing which is known as the pattern layout.

Among the many articles for the school which have been made in this department are jacks for the Auto Shops, a complete set of patterns for a veneer press, a complete set of patterns for a drill press, a break-pulley for the Electrical Shops, and the ball for the top of the flag-pole.

To finish this course which prepares the pupil to take a position as a skilled apprentice after he leaves school, two years are required: one in General Shops IM and the other in Pattern Making, which is a four-period subject with no work outside the class.

When they leave Tech, pupils of the Pattern Making Shop are prepared to go to work in this trade or trades relative to it, and often are placed by the school.

TRANSFORMER TESTING

THREADING CONDUIT AND TESTING FUSE BLOCK

Electricity

The Electrical department offers a varied program of work which is in step with modern advancements in electricity. Techites who are interested in a life career in some phase of electrical work are given the finest of opportunities for a flying start.

In order that the needs of the majority may be adequately provided for, the courses are planned in three broad divisions. These in turn are sub-divided to meet individual needs. The skeleton below indicates the general plan.

I. Vocational Division
   For boys who have definitely decided to become electrical workers.
II. Pre-vocational Division
   For boys who are planning to enter advanced technical courses in the vocational divisions.
III. Industrial Arts
   For boys who are passing through a period of vocation-finding and exploration.

The Vocational division includes courses which offer preparation in the three major branches of the electrical field: (a) service, (b) construction, (c) planning.

The Pre-vocational division includes courses which offer prerequisite preparation for advanced technical work in the Vocational division or for a professional career: (a) foremanship, (b) radio and public address service, (c) junior electrical engineering.

The Industrial Arts division consists of one section, electrical, of four units of a Building Crafts series. Appreciation, interest, and vocation-finding are the objectives.

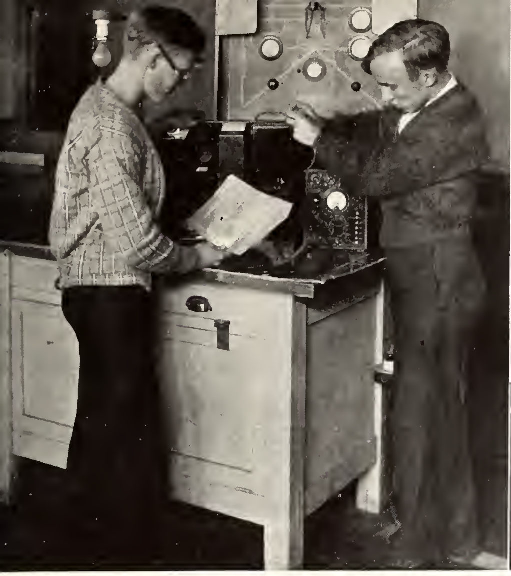
A survey of electrical industries and trades indicates that all kinds of electrical workers and pupils must acquire a basic knowledge of six divisions before they can work effectively or assimilate training properly. All the courses within the Electrical department are built around these divisions: I—operations, II—circuits, III—testing, IV—measurements, V—information, and VI—appreciations.

One period a week each class attends a demonstrated lecture covering the work of the current week. A total of 114 lectures has been developed, apparatus and equipment assembled, and the performance of the demonstration adjusted to the time allowed—forty-five minutes. These lectures help the pupils in seeing the relation between theory and its practical application and create interest in the subjects taught. Only three of the lectures derive their value from the spectacular. The remainder require clear thinking and close attention for proper appreciation.

Among the many worthwhile activities of this department during the past semester have been the extending of the Public Address System to the new school rooms which have been added this semester and the maintenance of the clock and bell system which constitutes the nervous center of the school.

Any one visiting the Electrical department for the first time would find various interests represented.

In the Light and Power Wiring Shop pupils study accepted wiring methods by actual installation. Small five-



AMPLIFIER TESTING

COMMUNICATION CENTER

room apartments are wired completely for lights and conveniences, D. C. and A. C. motors and their controls being properly installed. Another shop, used exclusively for testing electrical equipment, offers opportunities for making various performance tests of motors, transformers, generators, and controllers.

In the Radio Service Shop radio pupils learn how to operate and repair radios. In the Household Appliance Service Shop pupils learn how to repair vacuum cleaners, electric irons, electric clocks, washing machines, and electrical toys. The Electrical Maintenance and Repair Shop boys do both new and repair work. All the machines, equipment, and apparatus of the department are maintained by pupils in this shop. Also much special educational apparatus such as laboratory rheostats, experimental transformers, special mountings for commercial pieces, and literally hundreds of other things are being studied here. In the Basic Measurements and Testing and the D. C. Control and Testing Shops pupils lay foundations for future work by "doing and thinking." Pupils enrolled in Radio IV, which is Public Address work, are learning by maintaining the Tech Public Address System.

Two shops are known as the Introductory and Exploratory Shops. In the Introductory work beginning vocational pupils are introduced to the fields of electricity, the introduction lasting nine weeks. After this they go to the Exploratory Shop where they explore, by doing typical jobs, the three major branches of electrical work. In the Advanced D. C. Shop and the A. C. Shop and Laboratory pupils carry on many intricate tests and measurements. Rotary converters, three-phase generators, rectifiers, transformer banks, automatic starters, photo-tube controllers, polyphase wattmeters, synchroscopes, frequency meters, power factor meters, condensers, switchboards, relays, and so on indefinitely, fill the atmosphere with a characteristic hum. True, it is a noise, but it has a definite quality and is music to the ears of the electrical enthusiast.

The Public Address System, designed to be of service to the school, has been in operation for a year. It was built as an all-school project to benefit the school but the extent of its service was not realized until it was in operation.

The System has first of all worked as an educational tool. All work was done by Tech pupils. The Communication Center was built by the Carpentry Shop boys. All wiring was done by the Electrical Shop, while the radio equipment was installed by the boys in Radio Shop.

The Public Address System is of great assitance to the teachers in that they may have national programs brought to their classes.

It is also of convenience for the office to use when any last-minute bulletins have to be sent to the entire school.

For several years the Auditorium has been unable to accommodate the entire student body at one time because it outnumbers the seats therein by two thousand. This difficulty has been overcome, however, by the installation of transmitters which bring the programs to those in the classrooms.

The system is open to classes which have a message to give the student body. An example of this is the advertising classes, which sometimes use a broadcast as a medium to disseminate information about school projects. The public speaking and expression classes also take advantage of the system.

There have been four hundred and four broadcasts given since September. Some of

(Continued on page 12)

Mill Work

The ultimate purpose of the Mill Work Shop is to teach the boy the operation and the maintenance of the woodworking machinery of the mill room.

A pupil who wishes to take Mill Work must have completed either Building Crafts I and II or Metal Crafts I and II and must be recommended by a former shop teacher.

Mill Work may be taken through Mill Work IV, and on the completion of IV the pupil is prepared to take a position in a modern mill room or a furniture factory. The pupil who has completed four semesters of Mill Work is awarded a vocational certificate, symbolic award of the vocational school for having completed four semesters in the vocational subject.

Mill Work teaches the pupil to distinguish between the different kinds of lumber, how to work with it, and how to machine it. Pupils are also taught the curing and preparing of the lumber for use.

Pupils in Mill Work furnish the Building Crafts, the Cabinet Making, and the Carpentry departments with lumber cut to specified measurements.

The Mill Work shop is one of the leading shops in building school equipment. Projects which have been completed in the mill room are filing cabinets, screens, bicycle racks, boxes for the chemistry laboratories, and athletic equipment consisting of hurdles and jumping standards. Pupils in the mill room also construct stage equipment for the Stage Craft department.

Equipment of the Tech mill room comprises that of the modern trade mill room. Machinery and equipment which are used are rip saw, universal saw, planes, hand saw, jointer, shaper, mortising machine, tenoner, lathe, drill press, grinder, sander, and a supply of lumber which constitutes that of the stock of a modern mill room.

THE ELECTRICAL DEPARTMENT

(Continued from page 11)

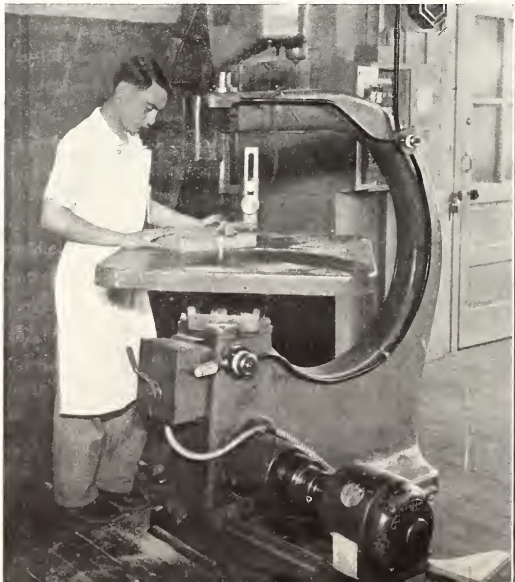
these have been outside programs consisting of lectures, music, and various other types. Others have been intramural programs. In rough numbers sixty-two thousand pupils have heard these programs at Tech.

Radio classes have been organized, in which are enrolled twenty-two pupils who are learning to broadcast by actual participation. They are learning to write script, to advertise, and to announce. The members of this group take charge of a program for a class, or individuals selected by the class may do the broadcasting.

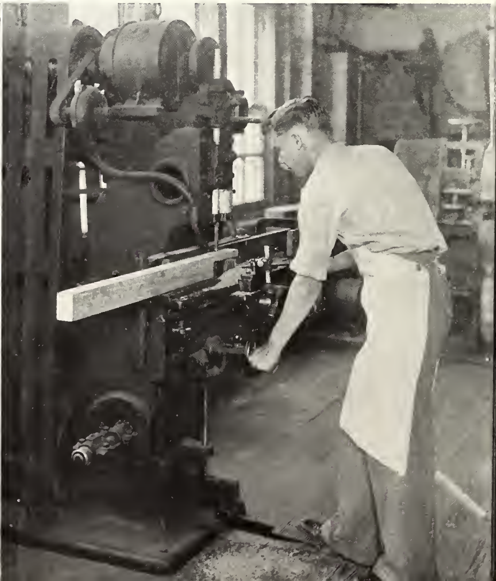
One of the latest projects that involves the Public Address System is the "Opportunity Hour." It is during this Hour that any pupil at Tech with singing, music, or dramatic ability is given an opportunity to broadcast his talent.

Radio is starting a new cicle in modern education. The Public Address System is a great asset to Tech. It is of great assistance to the faculty and a feature which stimulates the interest of the pupils in their class work.

THE JIG SAW



MORTISING MACHINE



Auto Shop

In the Auto Shop course pupils are taught the fundamental principles with which they will come into contact as auto mechanics after their graduation.

In their first semester of Auto Shop Work, the pupils do what may be termed "Rotation"—three weeks are spent in each of six different shops—Machine, Auto, Sheet Metal, Forge, Pattern Making, and Foundry. The purpose of this is to acquaint the pupils with trades that are used in connection with auto mechanics. By the time they have completed each of these three-week courses, their interest will have been evident and they can start work in the field in which they are most interested. The first-semester pupils study the various parts of a cut-away chassis and motors. They learn how to patch a tire, change a tire, and something about grinding valves. When they reach the end of the first semester in Auto Shop, they may continue with the work if they are interested; if they are not interested in Auto Shop, they drop out and take some other course.

In Auto Shop II the pupils study the chassis units. They learn different types of units and how to take apart and reassemble various parts of the automobile. For this purpose the school has bought various makes of cars on which the pupils practice. Dealers cooperate with the Auto Shop by demonstrating new parts and inventions as they are adopted as standard equipment.

The third semester of work in auto mechanics, Auto Shop III, is centered around electrical units and carburetion. The boys learn the "whys" and "hows" of things that have probably long confronted them.

The last semester of the two-year course in auto mechanics is spent in a shop which compares favorably with the commercial garage. Actual practice is made possible as privately owned cars are available for repair and service. The boys do everything with reference to fixing an automobile, under instructor guidance. In short, they are receiving experience in actual garage work with the intention of using this training in earning a living as automobile mechanics.

Related Work, a study taken in conjunction with shop work, is just as the name implies—it is related to the work done in shop courses. In Related Work the pupils learn various facts concerning automobiles, and in Auto Shop they put into practice facts they have learned.

Airplanes and aviation are constantly becoming more and more prevalent in modern everyday life. In the future there will be a great many opportunities for the person who is well versed in the field of aviation. Almost every type of business will be using the airplane in some way or other. Almost every phase of life will be applying the airplane for some purpose.

To teach Tech pupils the principles of airplane construction and repair is the purpose of Tech's Ground Mechanics classes. Pupils are taught how to operate engines, and are instructed in the overhauling of them. The fundamental principles of the internal combustion engine, storage battery, magneto, and carburetor, and other parts are studied.

Advanced technical classes (Continued on page 38)

GROUND MECHANICS

AUTO SHOP

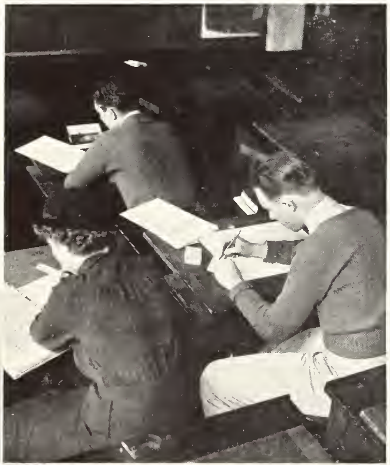
Graphic Arts

"Skill is stronger than strength" is a well-known quotation, and some of this skill is developed in the study of the closely allied subjects of the Graphic Arts department. Printing, layout, and commercial art—all are related in some way. The client presents his copy for an advertisement or a magazine to the Layout class, which plans the job and arranges the copy and drawings of the Commercial Art class on the page. The printer then sets the stories in type, and the result is the finished product of these three divisions of the Graphic Arts department.

In order to become a competent printer, one who is following the printing trade must have six years' apprenticeship, working fifty-two weeks each year and forty hours a week. Four years in the Print Shop at Tech are equivalent to nearly one year of this six-year apprenticeship. During these four years the pupil is prepared in some degree to start in the printing trade.

Upon entering Tech, a freshman may take the regular vocational printing course. This includes Printing, Printing Design, Printing English, and Printing Math. These same subjects are continued for four semesters, with the exception of Printing Math which is offered for only one year. At the completion of this two-year vocational course the pupil is presented with a certificate showing that he has completed the vocational course of Arsenal Technical Schools. However, if upon entering this high school a freshman is undecided as to which shop to enter, he may take a prevocational course, consisting of only Printing I and II. In this, the principles of monotype, linotype, press work, and bindery operation, including stitching, cutting, folding, padding, and stapling, are studied. If, after one or even two semesters, the pupil decides to enter the vocational shops, he may start the regular two-year vocational course where those principles touched upon in the prevocational course are studied in detail.

LAYOUT



In addition to learning principles, the pupils are given the opportunity of applying them to practical use. Among their oustanding projects are the printing of the weekly issues of Arsenal Cannon, football schedules, tickets for school activities, and hundreds of other projects which comprise the work turned out by this department. A large amount of the printed matter used by classes and teachers is produced in this shop: messenger badges, lunch passes, and lesson sheets.

A study of lettering, principles of design, and a background for the course in Advanced Design comprise the courses of study in the first two semesters of Printing Design, which is a required subject with four semesters of printing. In the third and fourth semesters of Design pupils make layouts which are drawings or plans from which lessons or jobs are set in type for the Print Shop, and the pupils set type from them. In this the pupil saves endless time in type composition just as the contractor works easily and efficiently from a blue print made by the architect. Advanced Design is offered to those pupils who wish to further their study of design in connection with printing, and who wish to obtain advanced work in the study of lettering and type composition.

(Continued on page 38)

COMMERCIAL ART

PRINTING

ARCHITECTURAL DRAFTING

MACHINE DRAFTING

Drafting

The world of today has become so industrialized, so filled with mechanical devices, that a general knowledge of the principles of drafting is required by the average person no matter what walk of life he follows.

In support of this idea, work in the Drafting department is carried on with three purposes. The first is to give a general education concerning the fundamentals of drafting in the form of mechanical drawing to those pupils who will be, in the future, the consumers of the products of the specialized mechanical industries. These people, in order to buy intelligently, should be able to understand the mechanism of the product they are buying and also to interpret clearly the preliminary sketches or drawings of plans submitted to them before their purchase of the object.

Approximately fifty per cent of the world's work is industrial and mechanical and these industries use a graphical language that is universal—that language used in the art of drafting. Therefore, there are people who will be engaged in occupations which, while they are not specialized drafting positions, use this graphical language as their means of expression. Consequently, those thus employed should be able to read this language. The same general knowledge which forms the objective of the second purpose of the department must therefore be imparted to this group of pupils.

Thirdly, it is the purpose of this department to train a pupil definitely toward his entering upon a career of specialized and highly defined drafting and designing. A pupil majoring in drafting at Tech has the opportunity to become a more proficient draftsman than one from many engineering colleges. Tech offers a more advanced course and a closer application of drafting rather than a study of the theories of the method behind the application.

This department has developed rapidly until at the present time it has nearly a quarter of the school's total enrollment entered in its fifty-nine classes. The advanced courses have been taught for eleven years. The architectural course was organized from a two-period course called Building Arts. In order to conform to federal and state requirements for reimbursement, both the specialized Machine and Architectural Drafting courses are four-period courses at the present time.

Nearly every phase of drafting from simple mechanical drawing and blue-print reading to the designing of houses and mechanical devices is offered to Tech pupils. Some of the advanced classes in Machine Drafting and Architectural Drafting have designed many improvements for the campus, outside of their regular classroom work.

Since much of the work done in the shops is laid out on blue prints, mechanical drawing is a required course in all vocational shop courses.

The architectural course is designed to be especially practical in training boys to become general draftsmen in architectural offices.

(Continued on page 38)

BAKE SHOP

MILLINERY

Home Economics

Even though a girl may never have any intention of choosing dressmaking as her occupation in life, the knowledge and experience she can receive from classes in sewing will always be helpful to her. Among the many classes in sewing are the three vocational courses in dressmaking, each of which is a four-period, two-credit subject, with no prerequisite. Art Vc as a supplementary subject is required for Dressmaking I and Textiles for Dressmaking II.

The dressmaking classes are conducted as a regular shop, the pupils taking and filling orders for any type of garment desired. The student dressmakers, as they are called, help the customer choose her pattern, consult with her about materials to buy, supervise the fittings; in fact, follow through each step until the article is completed.

During the past semester, some of the girls have made wash suits for four-year-old boys for the Needlework Guild of Indianapolis. They have also made aprons for girls in the eighth grade cooking classes. Making school banners, assisting with the making of costumes for school programs, and helping with decorations for school projects are ways in which they assist the school.

For the past ten years the Vocational Dressmaking classes together with the Millinery Shop have held an Annual Spring Exhibition to which parents and friends of the school are invited. The dresses that have been made by the pupils during the semester are either displayed on forms designed by classes in Stagecraft or arranged in attractive exhibits. Other articles are tacked on the bulletin board.

As one enters Room 153, in which the classes are held, it is as though he is entering a pleasant workshop, not a school classroom. Flower pots are at the windows, bright colored materials are scattered about on the table-desks, and about fourteen girls, all wearing neat lavender smocks which they made in Dressmaking I, are bent industriously over their work. Proof of their work is seen in the form of a few dresses hanging in the closet ready for delivery to the customer. On the bulletin board is pinned an apron with a sign "Suggestions for Leisure Time."

Many pupils secure good positions after finishing this course; others have started a trade of their own or have worked in various dressmaking shops.

The courses in millinery are given for the purpose of training pupils in the technique and construction of millinery and gift shop articles, and to prepare girls for positions in the millinery trade or similar fields of work. The equipment and general management in these classes is of such a type as to give a commercial atmosphere.

The Millinery Shop is a most attractive room boasting the equipment of a well planned shop. The shiny showcase displaying flowers of all colors and varieties, the wall cases with their colorful toy animals and pillows, and the many gay mats and little potted plants give the room a pleasing atmosphere.

The courses are divided into two parts, shop work and class discussion. The shop work consists of designing and constructing hats, pillows, comforters, and lamp shades; boutonnieres and novelty flowers; scarfs, bags, and other accessories; soft toys, dolls, and novelties; table runners and mats; party decorations; and remodeling, renovating, reconstructing, and repairing gift shop and millinery articles.

For class discussion the pupils make a fashion notebook. In this they keep material concerning the development and operation of fashions; the designers and shops; charts showing seasonal style trends, color leads, and hat materials; and reports and clippings from magazines and newspapers.

The only prerequisite for Millinery I is English III. This semester of millinery is a two-period, one-credit course. The pupils make articles for themselves. Their main accomplishment this year has been to complete a hat, scarf, and bag set.

Millinery II follows Millinery I, but it is not compulsory to take it in order to retain the credit received for the first semester's work in millinery. Only girls having developed a high degree of technical skill are advised to take this course. Advertising, Salesmanship, or Art Vc as supplementary courses are required before a pupil is permitted to enter the class. It is a four-period, two-credit course. The girls taking this subject spend most of their classtime making hats and various other items for outside customers for a small fee. In both classes one day each week is set aside for studying the prevailing styles and new ideas so that the finished product will be beautiful and up-to-date.

Each spring the Millinery department holds a joint exhibit with the Dressmaking department. Here the public is invited to see the fine specimens of work made by the pupils and to visit the classrooms.

Bake Shop, a class in quantity cookery, gives pupils an opportunity to handle food materials in quantity and to prepare them for sale. This course offers training for food trades in bakeries, cafeterias, and tea rooms.

Chemistry, physics, or bookkeeping are required with Bake Shop. Chemistry is recommended because it gives the pupil a knowledge of changes taking place in cookery processes, and makes him much more intelligent about the necessity of regulating processes of preparation. Physics is valuable because it gives the worker in food trades a knowledge of temperature control, mechanism of modern machinery, and other points necessary for one engaged in this industry to know. If one is going into a commercial kitchen, bookkeeping is useful so that one may keep records and understand cost accounting.

The products of the pupils are sold on Tuesdays and Thursdays each week at the Bake Shop counter, which is located between the new lunchroom and the faculty lunchroom, during the three lunch periods.

In order to carry on this sale of goods, the pupils must bake approximately the following amounts: forty dozen rolls; eighteen to twenty dozen yeast doughnuts; twenty to thirty dozen cup cakes; fourteen dozen cream puffs; six dozen tarts; also, miscellaneous candies and cakes. This sale occurs twice a week, and, so that all products may be guaranteed fresh, they are baked the very day they are sold. This procedure develops skill in the use of time for all goods must be out by roll call so that other pupils may buy the delicacies.

Not all of the work is done in baking, however. The pupils also cook croquettes and vegetable dishes for three-cent specials—dishes which are an added attraction and sell for three cents in the lunch room.

The work is done as in a commercial kitchen of any hotel or restaurant. Individual records are kept by the pupils so as to give them an idea of the cost of operating. Each pupil is assigned a special responsibility so that he learns to take charge of different jobs. This also gives him a sense of obligation and co-operation.

There is no textbook used in this course. Books are used only as reference. Recitations are held one or two periods a week so as to discuss nutritive value of foods, marketing, sanitation in handling foods, and other related subjects.

PREVOCATIONAL FOODS

DRESSMAKING

Music

Vocational courses are offered by the Music department for pupils who wish to follow music vocationally or avocationally. The courses offered are choral, band and orchestra directing, and accompanying choral and instrumental groups.

The vocational music course which covers a period of four semesters is invaluable for pupils who are planning to follow a music career.

Vocational music pupils are required to take four semesters of harmony, two semesters of music appreciation, and two semesters of sight reading and ear training and directing in connection with the required subjects in their chosen field, whether choral, instrumental, or accompanying.

Pupils who select choir training are required to take two semesters of voice training and to participate in a singing group throughout the four semesters of the course.

Those who select band or orchestra training or both are required to play a major instrument and to acquire elementary knowledge of all instruments played in their chosen field. They are required to be able to tune each instrument and to play elementary music on each instrument.

A pupil whose chosen field is band or orchestra or both is required to play his major instrument in an advanced band or orchestra throughout the four semesters. He is also required to participate in a beginning band or orchestra.

Pupils wishing to become accompanists are required to study keyboard harmony and to learn piano sight reading and transposing.

The motto of the vocational music pupils is, "Life without music is barren."

MUSIC

Agriculture

In contrast to the old farming principles taught by the pioneer, the pupil of agriculture at Tech is taught scientific facts of agriculture as it is practiced today. The two-year vocational course covers generally the opportunities in the field of agriculture including gardening, floriculture, poultry and swine raising, animal husbandry, bee keeping, and landscape gardening. The garden in the northwest corner of the campus is the only demonstration unit that the department has at the present time. Each year in the garden, the boys have the opportunity to plant, cultivate, and harvest a crop of vegetables which are used in the lunchrooms.

The course is intended to prepare the graduate for entrance in a university or for immediate employment in the fields of landscape gardening, truck farming, general farming, horticulture, teaching, and other agricultural lines.

In the flower garden which is attractively arranged with a bird bath and cement benches, the boys raise many varieties of flowers. Each fall they present colorful bouquets to the lunchrooms and the school offices. An additional project of the class this semester has been the completion of a tulip bed in front of the West Residence.

Tech has had a representative of its Agricultural department enrolled in college every year since the first graduate left Tech. Its graduates are found in every occupation that the field of agriculture can provide; gardeners, landscape artists, greenhouse gardeners, general farmers, and agricultural teachers. One is the secretary of the Marion County Greenhouse Association, and another is working for the United States Government.

The agriculture course offered here at Tech provides a splendid opportunity for the boy who finds his interests and talents lie along this line because of the beautiful seventy-six acre campus.

AGRICULTURE

ACTIVITIES

Participation in Campus Activities Develops Favorable Personal Traits.

To spend leisure time profitably and constructively, student activities, which were at first a small part of Tech's educational opportunities, now offer many advantages for the development of the individual. A pupil who takes an active part in any of the many extra-curricular groups which are organized at Tech may develop his initiative and leadership qualities, and broaden his appreciation of science, art, literature, drama, the sports, and many other fields of knowledge.

The result of this development and broadening is an ever-increasing originality in club programs and projects. Twenty-five clubs are active this semester; in these, pupils spend their leisure time in planning and presenting programs which are both entertaining and educational.

Extra-curricular clubs which represent different activities in the English department are the Stratford Literary Club, Debaters, Demegorians, Drama Club, and Library Club. Representing the Foreign Language department are the French, Latin, Spanish, and German Clubs.

Chemistry, Physics, and Nature Study Clubs comprise the extra-curricular groups from the Science department. The XYZ Club has been organized by pupils of the Mathematics department. The Social Science department is represented by the Social Science Club, and the Home Economics department by the Home Economics Club. Campfire Girls, Make-up Staff, the R.O.T.C., Girls' Physical Education, Chess, Sportsman, and Agriculture Clubs are other extra-curricular groups representing the widespread interests of Techites. Among the most recent organizations are the Auto, Model Airplane, and Ground Mechanics Clubs, organized by pupils of the Auto and Ground Mechanics Shops. Realizing the value of extra-curricular groups, the vocational shops have promoted the organization of these clubs to further an interest among the shop pupils for activities outside of regular class work.

"Travel" has been the theme of Stratford Literary Club this semester, and among the programs have been Mrs. Demarchus Brown's two lectures on her tours abroad, and travel talks by pupils. Several travel lectures have also been given in other clubs; among them, Miss Elva Antrim's discussion of a cruise which she took through Norway, Sweden, and Russia; a detailed description of Germany by a Tech pupil before the members of the German Club; and a travel talk by Miss Ellen Louise Stoy at the Social Science Club.

Speaking in different churches in the city is the project of the Demegorians, a very active organization. The debating team is a group which participates in the state debating contests.

Among the plays presented by clubs have been "Chez le Coiffeur," presented by the French Club; "The Frogs," a Greek comedy, adapted for presentation by a club member, given by the Latin Club; and "As the Gods Will," written by a Tech alumna, also presented by the Latin Club at the Classical Section at the convention of the Indiana State Teachers' Association. Mrs. Luz Castillo, soloist from Venezuela, and her accompanist, Mrs. Lawrence of Cuba, presented a unique program at a Spanish Club meeting.

The science clubs have had many varied programs and projects. Laboratory experiments have been demonstrated at Chemistry Club meetings, scientific talks have been given by members of the Physics Club, while the Nature Study Club has had as one of its projects taking long hikes on Saturdays to collect botanical specimens. A hike to Buzzard's Roost was taken, during which pebbles, stones, rocks, and boulders were gathered for the Tech rock garden.

The Social Science Club visited the Indiana World War Memorial; the Home Economics Club attended the Student Section at the convention of the Indiana State Teachers' Association and had the largest delegation of any high school in the state. Organized for the purpose of better acquainting pupils with the pleasure derived from participation in sports, the Sportsman Club has had some unusual reports by Tech teachers. At one of these meetings Mr. H. H. Meyer gave an interesting talk on football as played by the Indians.

Many other groups have been organized on the campus, not as regular clubs, which take an active part in various programs and activities and add to the general welfare of the school. Such groups include the Make-up staff, post-graduate ushers, traffic officers, Tech Honor Legion, the Arsenal Cannon staff, and the Cannon agents.

(Continued on page 29)

STRATFORD CLUB

DRAMA CLUB

DEMEGORIANS

DEBATERS

FRENCH CLUB

GERMAN CLUB

SPANISH CLUB

LATIN CLUB

PHYSICS CLUB

CHEMISTRY CLUB

SOCIAL SCIENCE CLUB

XYZ CLUB

HOME ECONOMICS CLUB

SPORTSMAN CLUB

MAKE-UP STAFF

MADRIGAL SINGERS

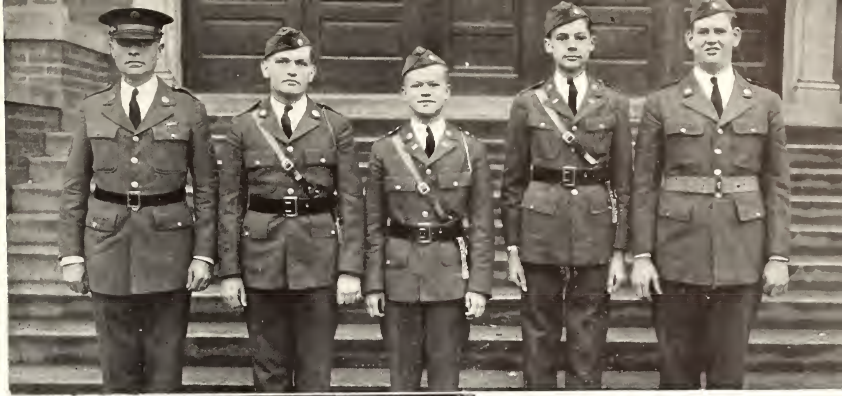
GIRLS PHYSICAL EDUCATION CLUB

CHESS CLUB

CAMPFIRE GIRLS

LIBRARY CLUB

R. O. T. C. OFFICERS CLUB



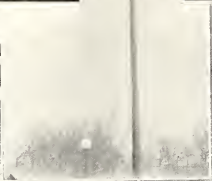
SOCIAL CENTER

SENIOR COUNCIL

TECH LEGION OFFICERS

SENIOR PLAYCAST

SPEAKING CHOIR



OSTS

CANNON HIGH HATTERS

THE INTERVIEW

WILLIE

THE ANVIL CHORUS

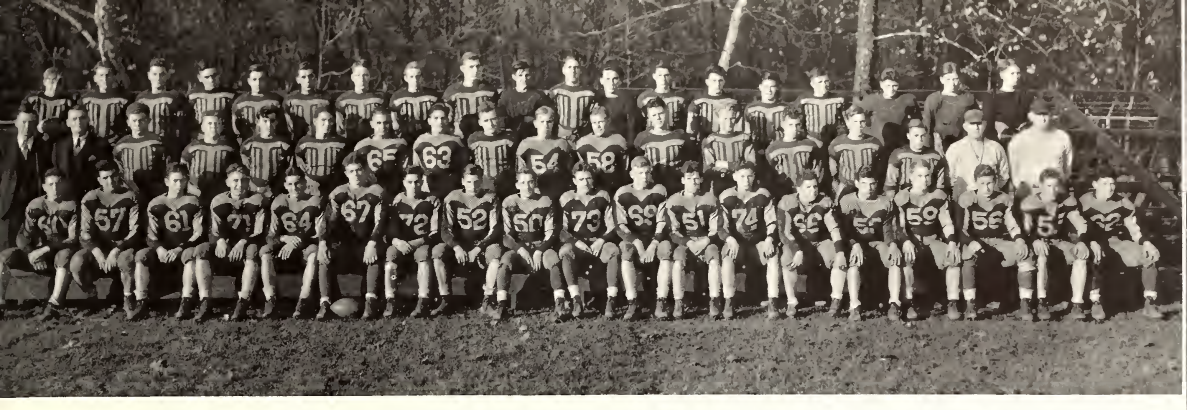
KARL'S FEET

HOME JAMES!

HOT DOGS!

SENIOR PLAY SET

4th HOUR ADVERTISING CLASS



First row—Joe Powell, Jack Jester, Donald Huffman, Eugene Bland, Jack Reedy, Don Staley, Bozidar Stoshitch (captain), Emmett McCleerey, Thomas Snyder, Harlan Weaver, Karl Brauer, Louis Lee, Eugene Brown, Donald Gillie, Kenneth Gasaway, Charles Mayer, John McHugh, Charles Gibbs, and Harry Adkins.

Second row—Athletic Director Fred R. Gorman, Coach Robert L. Ball, David Miller, Emerson Craig, Francis Foulke, Parker Wilson, Leland Wiggam, Jerome Smith, Lawrence Gallivan, McAdoo Kirsch, Lucien Renforth, Thomas Osborne, John Campbell, Darrell Thomas, Joseph Kirsch, Thomas Wilson, Reserve Coach Warren E. Cleveland, and Assistant Coach Charles P. Dagwell.

Third row—Donald Yelton, Billy Nichols, Michael Baker, Thomas Weaver, Raymond Fisher, Leroy Snyder, Richard McCord, Charles Hackney, Melvin Coulter, Joseph Minatel, Norman Linne, Andrew Daniel, James McCormick, Ralph Williams, John Sweeney, James Weaver, William Mannix, Roy Horstman, and Keith Jones.

Sports

FOOTBALL

Despite setbacks at the hands of two powerful city rivals including a heartbreaking loss to Shortridge in which the Blue Devils gained permanent possession of the city public high school championship trophy, emblematic of city gridiron supremacy since 1920, Tech's varsity football squad enjoyed a successful season under the direction of its new coach, Mr. Robert L. Ball. Aided by an abundance of weight and speed, the Big Green eleven subdued Wiley of Terre Haute, Richmond, Muncie, Manual, Frankfort, and Washington, while succumbing to Shortridge and Cathedral.

Combining slashing plunges and sweeping end runs with a brilliant aerial attack, the Green and White gridmen amassed a total of 128 points to their opponents' 50. Coach Ball's team rose to its peak early in the season, making its most brilliant performances in the Richmond and Muncie contests.

Rain hampered play in the initial game of the season with Wiley, but Tech's heavy line proved too much for the Terre Haute lads as Weaver scored one touchdown and McCleerey recovered a punt blocked by Staley over the goal to start Coach Ball off on the right foot at the Tech field, September twenty-seventh. Wiley failed to threaten, Tech winning, 12 to 0.

Resorting to straight football, complemented by good blocking, Tech's gridmen won their second victory over Morton of Richmond, 31 to 6, at the Tech field, Friday, October fourth, in a North Central Conference encounter. Snyder and Weaver each pushed over two touchdowns and Stoshitch one. Lundy, fleet negro halfback, scored the first touchdown of the season against Tech on a well-executed pass play to avert a shut-out.

Tech showed a great deal of power in pounding out a 20-to-0 victory over Muncie in a North Central Conference game at the East side field, Friday, October eleventh. The Big Green team was forced to exhibit a stalwart defense to turn back determined Bearcat drives in the first half and then came back after the intermission to rush over three touchdowns, all on passes, with Huffman, Weaver, and Snyder on the receiving end.

In its first city series game of the season, Tech rambled over Manual, 20 to 0, at the Tech field, Friday, October eighteenth, for its fourth consecutive win. Passes paved the way for all three touchdowns, and superiority in this department offset the lack of efficient blocking which had featured previous victories. Touchdowns were registered by Snyder, Crofts, and Weaver.

Cathedral handed the Eastsiders their first setback of the season, 12 to 6, before a capacity crowd at the Tech field, Friday, October twenty-fifth, as the Big Green team experienced a case of "jitters." Conner passed over the goal to Maybee in each of the first two quarters to give the Irish a lead which Tech failed to overcome in a desperate second-half rally which netted one touchdown and a penetration to the twenty-yard line when the final gun halted hostilities. Tech's touchdown was scored on a lateral from Snyder to Weaver.

After trailing, 7 to 0, at the end of the initial quarter, Tech's Big Green eleven staged a rally that netted three touchdowns in the second and third periods to offset Frankfort's daring passing attack in the only out-of-town game of the season at the Hot Dogs' field, Friday, November first. Frankfort's two touchdowns, registered by the Miner to McCreary passing combination, the last of which was scored in the final minute of play, were not enough to surpass Tech's three, and the Green and White won, 20 to 13.

Tech moved into a contending position for the city championship by humbling Washington, 13 to 0, Friday, November eighth, in its third intra-city contest. The Green and White eleven scored in the second and third periods as the result of sustained drives, Weaver and Snyder going over for the scores.

Tech and Shortridge entered the final game of the season undefeated in cup competition and each holding four of the necessary five legs on the trophy. The Butler bowl was the scene of the annual conflict which was attended by a crowd of approximately eight thousand.

The Blue Devils used a variety of spinners and reverses to hand the Techmen a heartbreaking 19-to-6 defeat and end an era of closely contested gridiron encounters that will be remembered for years.

Shortridge marched down the field for its initial marker in the second quarter with Brown plunging over, but the Eastsiders came back in the same period to execute a brilliant pass play from Snyder to Weaver, good for 63 yards and a touchdown. Coach Nipper's team came back after the intermission, however, to push across another tally, Fehsenfeld ending the drive by snagging a pass over the goal from Allerdice. Bartley chalked up the other touchdown by intercepting a pass and racing thirty yards to the goal in the final period.

RESERVES

Completing an undefeated schedule and capturing the city reserve title, Tech's B team, coached by Mr. Warren E. Cleveland, enjoyed a very successful season. In this squad, Coach Ball will have an excellent start on next year's varsity.

Displaying power in all phases of football, the Green and White reserves opened their schedule October sixteenth by easily crushing the Manual seconds, 72 to 0, on the Tech field.

A pass for a touchdown in the final period gave the Tech seconds a 19-to-13 victory over Cathedral, October twenty-fourth, at the losers' field. In another hard-fought battle, the Green and White B team edged out the Shortridge reserve squad, 7 to 0, October thirty-first. The following Thursday, November seventh, the reserves concluded an undefeated four-game schedule by humbling the Southport seconds, 20 to 0, at the Tech field.

FRESHMAN

Points after touchdown provided the losing margin for three games of Coach R. C. Lyon's squad which dropped its four-game schedule by three very close scores and a 41-to-0 drubbing at the hands of the Washington rhinies, November seventh.

In their first contest of the season the Tech freshies were forced to bow to Manual, 14 to 13, at Manual, October sixteenth. Cathedral nosed out the Tech rhinies by a one-point margin at the Tech field October twenty-fourth. A point after touchdown would have tied the 14-to-13 score. October thirty-first, the Shortridge freshmen defeated Tech, 20 to 18, at the Tech field.

Members of the squad were Charles Adkins, Harry Barton, Arthur Beldon, William Bevis, Don Bostie, Harold Forkner, William Garrett, Herman Hanson, Carl Hartlage, John Higginbotham, George Kennelly, Edmund Laver, Clarence Loos, Jr., Jack Lee, William Lucas, Morris Mikkelsen, William Moore, Jr., Brooks Powers, Forest Risley, Dewey Roberts, George Shaffer, Vincent Shanahan, Jean Stroh, O'Donovan Tayler, Bob Teen, Robert Tomlinson, Eugene Tracy, James Wecksler, Paul White, Raymond Wiggins, and George Willeford.

CROSS-COUNTRY SQUAD

The cross-country squad, coached by Mr. Paul E. Myers, succeeded in winning only one of its four meets during the 1935 season.

In their opening engagement, the Tech harriers fell before the Washington thinly-clads, 24 to 31, at the Tech field, October eleventh. Placing in four of the first five places, the Green and White harriers outstepped Manual, 17 to 38, at the Tech field October eighteenth. In their third meet the Tech tracksters suffered a 23-to-32 defeat at the hands of a strong Ben Davis squad, October twenty-fifth. Coming from third place in the final seconds of the meet, Elias Poulos, Tech sophomore trackster, lead Weddle, Continental star, to win first place in the last meet of the season, November eighth, on the Tech field. Although Washington won the meet, 23 to 32, Poulos' time was 8:6, exceptionally fast for the mile-and-one-half course. Poulos also paced the pack to the tape in Tech's only victorious meet of the season.

Elias Poulos, George Dirr, Samuel Hassan, Warren Harvey, George Dyday, Robert Delrymple, John Carr, Richard Vogler, Lyndall Miller, James Comfort, and Maurice Daniels composed the team.

GOLF TOURNAMENT

The Green and White link squad placed fourth in the North Central Conference golf tournament, Saturday, September twenty-first, at Newcastle.

Individual scores for Tech were as follows: Wayne Monfort, 85; Dick Martin, 78; Arthur Weddle, 91, and William Crawford, 91.

The Richmond team turned a score of 312 to win the meet, while Lafayette, Newcastle, and Tech placed in order.

TENNIS TEAM

As defending champions, Tech's tennis double team which was composed of Carl Bohn and Elmer Molique carried off honors in the annual North Central Conference tennis meet at Newcastle, Saturday, September twenty-first. Ralph Linder, Green and White single entry, was defeated by McIlwain of Logansport by a score of 6-4, 6-2, in the semi-final match.

Molique and Bohn downed Logansport's team by a score of 6-1, 6-3, which gave Tech its victory in the double match. The team was directed by Coach C. P. Dagwell.

INTRAMURAL PROGRAM

A well organized intramural program, being carried on under the direction of Mr. C. P. Dagwell, provides a basketball league and a ping pong tournament.

The basketball league involves ninety-four teams which have been organized in the roll rooms. Each team is under the direction of an appointed student manager who conducts his team in the tournament. Two games are played each afternoon after school hours. By competitive elimination Mr. Dagwell will find the intramural basketball championship team of the entire school.

The intramural ping pong tournament held during lunch periods in the attic of the Main was discontinued before the holidays but was resumed at the first of the year to determine the ping pong champion of the school. Each participant reported to Mr. Dagwell and received his instructions as to when and against whom he was to play.

GIRLS' TENNIS TOURNAMENT

In the annual fall girls' tennis tournament Geneva Senefeld, defending girls' champion, retained her title by triumphing over Charlotte Rothkopf, 6-4, 6-1, in the final match.

The runners-up for the semi-finals were Geneva Senefeld, Virginia Merklin, Charlotte Rothkopf, and Mildred O'Donnell. Geneva Senefeld won over Virginia Merklin with the score 6-4, 6-4, and Charlotte Rothkopf triumphed over Mildred O'Donnell with a net score of 6-8, 6-4, 6-3.

GIRLS' ATHLETICS

In addition to the class work in girl's physical education many extra activities are enjoyed by the girls. Such sports are basketball, volleyball, hockey, volley ring, aerial dart, relay races, acrobatics, baseball, tennis, and archery.

Class work includes stunts, dances, and games. Dancing—creative, tap, and character—basketball, volleyball, and stunts are some of the activities included in the class sessions.

The extra-curricular activities are carried on after school. For participation in these games a pupil is rewarded by receiving points given according to the work and ability the pupil displays. When a prescribed number of points is attained, awards are given: three hundred and fifty for the first award, seven hundred and fifty for the second award, and one thousand points for the third medal.

A bronze wings pin is the first award, a bronze shield is the second, and a gold bar pin is the third.

ACTIVITIES

(Continued from page 19)

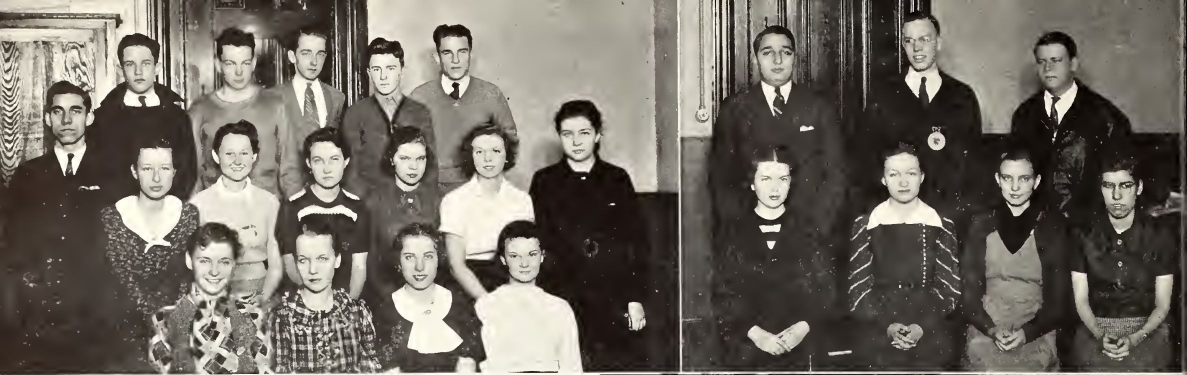
Traffic officers are stationed on the campus and at the gates to maintain safety and orderly conduct. Courteous guides from the R. O. T. C. unit are on duty during Open House and on other guest day occasions to direct visitors about the campus.

Sports have always held an important place in school life. Football, basketball, track, and other athletics, not only interschool but intramural, have the strong support of a keenly interested student body.

Organized last year for the purpose of recognizing pupils outstanding in citizenship and qualities of personal worth, and composed of the ten per cent of the senior boys and ten per cent of the senior girls with the highest number of merit citations, the Tech Legion is one of the school's finest organizations. This group cooperates with the school by engaging in activities which will benefit the broad interests of the student body, and by aiding in the development of the traits which contribute to group achievement.

Undoubtedly, student activities are an important part of high school education, not only benefiting the pupils by the wise use of leisure time after school hours, but also preparing them for a broader, fuller life in years to come.

GIRLS' ATHLETICS



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* * * *

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IN APPRECIATION

We wish to thank the following people for their splendid cooperation in helping us publish the January Magazine:

Elmo Hessler, Jesse O. Brown, Maurice Llewellyn, Harold Ploughe, Richard Wilcoxen, and Alberta Rogers who assisted the layout editors; Robert Randall and Richard Wilcoxen, for their art work; and the print shop pupils for the printing of the cover.

We also wish to thank the following faculty members who served as judges of the literature contest: Miss Hortense Braden, Miss Alice Brown, Miss Esther Fay Shover, Miss Narcie Pollitt, Miss Clarissa Morrow, Miss Edna Nowland, Miss Clara Ryan, Mr. Charles R. Parks, and Miss Margaret Axtell.

CANNON AGENTS

MAGAZINE EDITORS

MARY PRATER

VIOLA FRANCISCO

LEISURE

> *"A little work, a little play*
> *To keep us going—and so, good-day!"*
> —DU MAURIER.

With the decrease in the number of man's working hours, the wise use of leisure time has become a very important problem for the American people who must have some activity with which to occupy their free time. Leisure is an essential part of life. Man needs time to relax, to forget the cares of the day, and to enjoy recreation so that when he returns to his labors, his mind will be freshened, and he will again be ready for work.

By using leisure constructively man's education is broadened, his life enriched; by using it non-constructively his outlook on life becomes narrow, and his interests extend no farther than his own environment. When a man loses his contact with outside affairs, his interests become self-centered, and, consequently, he is unprepared to take his place in the world among constructive-thinking citizens who help raise the standards of civilization to a higher level.

Whether a man spends his leisure advantageously or wastefully depends to a large degree upon his training in early life. Upon the modern high school rests much of the opportunity for the preparation of youth for the profitable expenditure of leisure and for participation in adult life as all-round good citizens, for "The way to be sure a boy will be a good citizen when he is grown is to see that he is a good citizen while he is growing."

Young people are willing and eager to broaden their knowledge in a great many fields. Their viewpoints are pliable and change many times before they become definite. The activities in which they spend unoccupied hours leave impressions upon their minds that will either be steps forward or steps backward in their progress toward manhood or womanhood.

Schools help build the foundations of the world of tomorrow. That world must be an advancement over the present world—it must be a finer place in which to live. To make it finer, people of tomorrow must be better educated, more progressive than the people of today.

The desires of the youth of Technical High School to spend their leisure in worthwhile activities are satisfied by their participation in the many extra-curricular groups on the campus, which have been organized to meet the varied interests of the student body. In these different activities pleasurable and educational hours may be spent where personal traits of tact, tolerance, initiative, and leadership may be developed. The members of these activities present programs and projects in which free time is usefully employed.

Truly, Techites who take part in student activities are spending leisure time profitably, are taking steps toward good citizenship; thus becoming an asset to the community in which they live and to the people with whom they come in contact.

VIOLA FRANCISCO.

VOCATIONS

> *"There is no greater happiness than to be able to look on a life usefully and virtuously employed."*
> —SAMUEL JOHNSON.

Work is essential for life itself. Should man cease to labor, he would cease to exist. Nor does man labor for himself alone. The welfare of his loved ones depends upon his ability to supply them with the necessities of daily life. When he fails at his work, he fails in his duty to all those dependent upon him. In this period of depression man's success depends chiefly upon his ability to hold a good position. Every man must perform some part in the industrial world, no matter how small, as his cooperation upholds the standards and ideals of civilization. Man has discovered that many of the problems of everyday life may be forgotten as long as he is absorbed in work. Sorrow, anxiety, worry, and fear are laid aside as man works feverishly, trying to forget material cares. Love, happiness, and good fortune elevate his spirits, and his work shows the effects.

Work is indeed the cornerstone of the world. Civilization would surely crumble and be destroyed if that cornerstone were destroyed and man refused to work again. Work, faithfully performed, gives the individual a sense of self-respect and self-confidence.

Dreamers have founded nations. By the efforts and dreams of countless generations are we able to enjoy the privileges and benefits derived from their labors. The dreams of the ancients were big, seemingly impossible at the time of their inspiration, but hard work made many of their dreams come true. All of us may dream wonderful, worthwhile dreams, set high standards and ideals, but these avail nothing if we cannot reach our goal through our own efforts.

Today, as the result of dreamers, of far-seeing educators, great schools have been founded where are offered to young and old alike, practical courses in which may be studied worthwhile occupations, occupations which enrich the life of the individual and make him realize that his presence on earth is desirable. The Tech youth need not hesitate or wait until later years to determine the line of work he is best fitted to follow. Opportunities for almost every phase of work in the industrial world and development of almost every talent are presented to him. Well-organized vocational courses of interest to every young boy and girl have been planned to meet his interests and abilities.

Each pupil at Tech has the opportunity to develop his talents, to realize that he must work at the task best fitted for him, to learn to think for himself. No matter what talents one possesses, no matter how great or how small, if one talent can be developed to the highest degree of skill and perfection, the individual will have succeeded in filling the place for which he was meant; and the world will recognize his ability.

MARY PRATER.

LAYOUT EDITORS

DONALD BEHRMAN ALMA FISHER

R. O. T. C.

For the fourteenth consecutive year the R.O.T.C. unit has won the red star symbolic of honor rating in the Fifth Corps Area. Each spring the annual inspection is held when the honor schools are designated. The inspection, one of the features of the school year, is attended by thousands of visitors.

The R.O.T.C. was instituted at Tech in September, 1919, the training at that time being compulsory for all boys. The unit consisted of approximately two thousand cadets with seven instructors in charge.

In 1921 the subject was made elective and the enrollment decreased to sixteen hundred cadets. A captain was then placed in command and four instructors were relieved. It was in this year that Tech won its first red star.

In 1931 Staff Sergeant Chester A. Pruett, who was assigned to the unit in 1920, was given complete charge with the assistance of one other non-commissioned officer. His assistant retired in 1932, leaving Staff Sergeant Pruett as the only instructor until this year when Sergeant James Greenwood was assigned to the unit.

Approximately seven hundred cadets are enrolled in the R.O.T.C. this year. This includes the Military Band with an enrollment of eighty-six members, under the direction of Mr. Raymond Oster.

The commissioned staff for this semester includes forty-three members. There are one hundred and twenty-eight non-commissioned officers.

The entire unit is in charge of Cadet Colonel William Waters and Cadet Lieutenant Colonel Winfred Naselroad. The unit is divided into two battalions commanded by Cadet Major Lee Brown and Cadet Major Ray Baker. The companies are commanded by cadet captains and the platoons by cadet lieutenants.

Tech's entire unit marched in the Armistice Day parade. This is perhaps the most colorful event in which the unit participates. The unit marched in the third division, composed of the R.O.T.C. units of the city high schools.

At eleven o'clock the entire parade was halted while buglers sounded taps in the memory of the war dead.

The unit is busy the entire school year with drilling and classroom work. On the drill field close and extended order drill are taught in the fall and spring, when weather permits.

Classroom work includes the instructing of military courtesy and discipline, rifle marksmanship, interior guard duty, map reading, and musketry. The cadets are divided into classes according to the number of semesters they have taken military training.

The mission of the R.O.T.C. is to awaken in the pupil an appreciation of the obligations of citizenship, to prepare him to discharge his duties as a citizen, and to qualify him as a leader whether in peace or in war.

Each year the fifty-five ex-service members of Tech's faculty present a medal to the private, non-commissioned officer, and commissioned officer who have shown the highest proficiency in the classroom and on the drill field.

The R.O.T.C. unit is one of the leading organizations on the campus as seen by mentioning some of the events participated in by its members.

A group of selected cadet officers was appointed as ushers at all of Tech's football games played at the home field.

Each of the assemblies of the school is marked by the opening military exercises. Two cadets with the national flag and the school flag, attended by two cadet color guards, march down the aisle to the stage where they place the colors while the entire audience stands.

A detail of non-commissioned and commissioned officers served as ushers and guides for the annual Open House, November thirteenth. They were in uniform and helped many confused visitors in directing them to various buildings and rooms.

The annual feature of the fall semester was the second annual "Fathers and Sons" banquet, held November twenty-sixth in the lunchroom. The guest speaker was Mr. William H. Remy. William Waters, cadet-colonel, gave the greeting to the fathers. Mr. DeWitt S. Morgan introduced the toastmaster, Mr. D. C. Park. Each cadet was invited to bring his father or any other male adult who is interested in him and his work.

R. O. T. C. BAND

STUDENT INSPIRATIONS

The Creative Ability of Young Artists is Inspired by the Beauty in Everyday Life.

PRISONER OF THE BASTILLE

One, two, three, four, five, and a half step and about face; one, two, three, four, five and a half step and about face. The man paused. There was a crash and then the shouts of men seemed to come from all directions. It seemed to the prisoner that the cliff of a great mountain had crumbled and crashed at his feet. And his ears transcribed the vibration as the thunder of a great earthquake. To his feeble mind there came the realization that something either good or bad was going to happen to him. For three days now, that roar had continued. Would something happen to him? What could be happening outside? Ten years! Buried alive! Seeing only one man, the prison keeper, and he a sullen, uncouth person that believed in law only, the law of the nobles. The great nobles, ha, ha! Would their punishment really come soon? Would they get their lettres de cache as he did years ago? Revenge is sweet, sometimes, but bitter to take in the end.

There seemed to be that continual roar of an ocean. The noise was louder, then it seemed to die down. Then the dam broke and the ocean wave of people came flooding into the Bastille. There loomed up before him a man and then, others. How queer, the sullen prison keeper himself took out the rusty keys that he had sworn never would be used again on that cell door until the prisoner within died.

"Down with the Bastille! Down with the Bastille!" The crowd shouted. The cell door creaked on its hinges in answer to the crowd. His mouth opened, his eyes giving the expression of total misunderstanding told to the crowd what the hardships of eight idle years had done to him.

The crowd pounced upon him, as a child jumps and grabs a little fluffy kitten with a shriek of gladness. Lifting him to their shoulders they carried the bewildered man down the filthy hall and stairway. The air, the breath of men dead, still lingered to haunt the living.

Shouts of the crowd, the waving of swords and knives as banners, seemed to light the dark night. The prison keeper was dead, for the mob of people had killed him. His precious blood was upon their clothes, hands, and the weapons that had killed him. Dazed and bewildered, the prisoner wondered why he should be treated as a nobleman and the prison keeper tramped on as a peasant. Where were they taking him? They seemed to be enacting and following in the footsteps of the Israelites of Jericho, the promised land, for already they had gone around the Bastille eleven times.

Down with the Bastille! Down with the Bastille! "We have seven men as witnesses against the nobles, and a thousand more in the crowd." All night they swarmed through Paris, carrying their seven royal passengers, and as lanterns, the heads of nobles. All night their shouts went up. The nobles must feel as the sinners of Jericho, that their power was gone, that tomorrow there would be right, justice, equality, and freedom.

It was almost daybreak when the crowd, growing tired of their task, let the prisoners down and started to their dwellings. At first the prisoner was pushed one way, then another, as the crowd moved on. A few minutes and they were gone. The prisoner stood before his tomb, the Bastille. There before him brick upon brick was the ruin of the peasants' curse. The sun appearing in the east gave hope and determination for a new day.

The prisoner, stooped shoulders, white hair, dull blue eyes, and a pale complexion caused by the long imprisonment, impressed the child standing nearby that he was a middle-aged man. His clothes, old, rotten, had the peculiar odor of a dead man. As the man stood trying to think of the past, the peasant lad touched his arm and asked him, "Were you a prisoner of the Bastille?"

"Ah, yes, my lad, you have many things to learn." Then gathering his wits about him, the few remaining thoughts of the past, he turned, staggering down one of the dark streets of Paris. He thought of home, his wife and child, and the happy fireside that years ago were his. How old was the child? Oh, yes, about nine. His son, then a chubby little baby boy with curly hair, blue eyes that looked up into his eyes with trust and love. He saw it all; his dear wife rocking the baby by the fireside. The vision was a picture not to be erased from any man's memory.

A streak of light at the intersecting streets showed to the lad following that he knew not which way to go. Then he chose the right, and stumbling forth between the walls of houses, he was half covered by the mist of the coming day. The child followed. Two just alike, one, a middle-aged man; the other, a little waif, both homeless. Stopping after he had walked several blocks, the old man opened a door and walked up two flights of stairs. The child crept behind in the shadow, slipped in through the open door.

Knock, knock, knock, went the old man's knuckles against the door of the home where once he was master.

A gruff voice cried, "Who is there?"

A quivering voice answered, "I am a prisoner of the Bastille. Come to the door."

After much commotion a man in a white night cap opened the door and roared, "Now what do you want?"

"Oh, please, sir, how long have you been living here?"

"About five years. What's that to you?"

"Did you know the merchant living here?"

"No, but I knew his wife and son. His wife shared the same fate as he did. I am not real sure, but I believe that a neighbor took the boy in their home."

"Thank you," replied the prisoner.

Turning, he started down the stairway, but at the foot he almost stepped on the little lad that had followed him.

"I'm so sorry."

"You didn't hurt me," replied the lad.

"I am so glad. Why do you follow me?"

"I don't know."

"I am poor, I can not help you. Why don't you go your way and let me go mine?"

With an uplifted face, the blue eyes expressed a hurt feeling. "I—I don't know, I—I have no home now."

And as the child turned to leave with his curly head bowed and tears streaming down his face, the old man's heart sank within him, and he called the child back. His baby boy had blue eyes and curly hair just like this one. His baby boy would have been that age.

Taking the child by the hand he turned and looked back at the house he had just left. It was more dilapidated than any of the others. No paint was upon its walls, garbage was strewn on the steps, rats were running in and out, and streaks of daylight came through the gaps in the walls. He could remember that house as it was fourteen years ago. It had been beautiful because it was home, because it was clean, and because he had brought her there when she was his bride. Breaking himself away from his thoughts for they reminded him that he was old too, he asked himself, "Am I growing old with grace, or in shame?"

"What is your name, my lad?" asked the prisoner.

"My name isn't much of anything. Of course, the woman that used to take care of me called me Jeanne De Cour, a beggar and a waif."

The old man stood still, paralyzed, for this must be his son and he had been going to turn him away.

He asked, "Where are the people that kept you?"

"They moved away last week; I beg for my food."

"Do you remember the house we were just in?"

"Yes," the little lad answered. "My mother was taken away from me in that house when I was four years old. I have never seen her since. I guess I never had a father. Do you think I did?"

"Yes, my boy, you had a father." After a pause he continued, "I am your father."

"You, my father! You will let me stay with you?"

"Yes, yes, Son! Now we must find your mother."

"My mother; you will find her?"

"Yes, Son."

As they reached the intersection of two streets the rays of the sun illuminated the way for the father and son—in the distance was the wife and mother waiting for them.

RUBY HELEN STEUERWALD, ENGLISH VI.

FATE AND A SHOE-STRING

If Anne's shoe-string had not become untied that fateful afternoon, there would have been no story. Miraculously, though, it had come unfastened, and she had given her books to Dave to hold for her. David Cummings took her small library and carried it the rest of the way to the Morton home. There, when they parted a few minutes later, Dave unwittingly gave her his books. That was one of the worst mistakes he ever made.

Who were Anne and David? Well, Anne was Dave's "girl," and to him she was perfect. Dave was—and had been for a long time—Anne's ideal. As far back as they could remember, they had played together—through babyhood, kindergarten, and the first few years of grade school. Then Dave had suddenly stopped running over every afternoon. He had found out that only "sissies" played with girls. Now they were both seniors in high school, and their renewed friendship was stronger than ever. The two never seemed to tire of each other's company, and they had never really quarreled. "But there'll come a day," some of their friends prophesied. "It can't go on forever."

Sad to say, it didn't. That night Anne started her lessons. Then she noticed that her books had been exchanged with Dave's. And then—then—then came the blow! Anne, in turning over a sheet of paper in his French book, had come upon a girl's name, Jean Marie. She read the words written in Dave's bold handwriting, "Jean Marie is very beautiful. She is the loveliest girl I know." The dumbfounded Miss Morton couldn't believe her eyes. Dave! To think he'd write that when all along he had said that she was his only girl. How could he be so untrue to her? Anne was beyond tears; she was angry!

At Dave's home, Anne's "ideal" had just begun his Minimum Essential Drill when he noticed that it wasn't his text from which he was studying. He picked up the books and started to return them. As he did so, a slip of paper fluttered to the floor. It was the beginning of a letter. When Dave picked it up, he noticed that this was no ordinary epistle, for it began, "Robert dearest," David, not stopping to think that it wasn't quite right to read other people's mail, read on. "How you can write touching things to me; and how my whole being vibrates as a string to these! How have—." There, the rest of the paper was torn off, but that was enough! Writing to other boys, was she? Silly, sentimental notes to some chap who sent poetry to her, no doubt! Did she think he'd stand for that? Certainly not! He'd show her!

No words were passed between them when Dave returned the books. Both wondered why the other didn't speak. Thus it continued. For two weeks the whole community buzzed about the pair.

"They aren't speaking to each other," whispered Mrs. Ginnis to the neighbors next door.

"No, and he isn't walking home with her any more, either," they answered.

Finally David determined to find out why Anne persisted in avoiding him on the campus. She didn't have anything to be mad about.

"Why on earth doesn't Dave ask me what is wrong?" Anne kept saying to herself. "He needn't be so huffy."

One morning about two weeks later David passed Anne's home just as she stepped onto her front porch. "Good morning, Miss Morton," he said.

"Good morning, Mr. Cummings," she answered coolly. He waited for her till she stepped beside him.

"I'm not going to start this conversation first," Anne thought. Naturally the same idea was in David's mind. The almost unbearable silence continued. Then a torrent of words broke forth. They started jabbering simultaneously.

"How's 'Robert dearest' this morning?" snapped Dave.

"Is 'Jean Marie' still your idea of the loveliest girl in the school?" Anne flung the words at him. They both stopped.

" 'Robert dearest'? What do you mean?" queried the "perfect" girl.

"Who in the world is Jean Marie?" Dave demanded.

Anne retorted, "Oh, so you don't know any girl named Jean Marie, huh? Well, look at this!" She tore the note from her book and fairly threw it in his face.

Dave looked. As he read the words a slow smile spread over his face. It changed into a grin. Then he burst out laughing. "Jean Marie! That's good! Why, Anne, that's just part of my French translation for several weeks ago. Ha! I though part of my lesson was missing."

A look of relief flooded Anne's face.

Then as suddenly as Anne's expression had changed, Dave's visage became dark again. "So you're going to act as if you didn't know 'Robert dearest.' I guess you'll remember the dear boy who writes lovely poetry when you read this!" David pulled out of his pocket what he called damning evidence and handed it to her.

Instantly Anne recognized the paper and laughed. "Oh, this is comical! 'Robert dearest.' So you thought I was writing love letters, did you?" Her hilarious outburst continued.

"What's so funny?" growled Dave. "If it isn't a love letter, pray tell me what? An algebra problem?"

"No, silly," Anne said happily. "We were studying this in English one day. It's just an excerpt from one of Elizabeth Barrett's letters to Robert Browning!"

ELEANOR HARTER, ENGLISH VIIC.

BIRTHDAYS ■ ■

Why, even to think of a birthday celebration without a cake trimmed with candles would be an insult to tradition! I stood gaping at my friend with whom I was talking. "Do you really mean to say that you never had a birthday cake and candles?" I almost shouted the words in my shock. I had always had a cake with the proper number of candles every year on my birthday. The idea was traditional in my family. My mother said that is the proper way to acknowledge such an event; my grandmother agrees with my mother; my great-aunt agrees with my grandmother; so I, too, after seventeen years of the same birthday tradition am agreeing with all three of them that the idea is quite the sane and proper one.

I can't remember my first birthday cake. I imagine that at the time neither its beauty nor the one little candle topping it had any effect on me whatsoever, except as an object for childish destruction. However, I am firmly convinced there was one because mother said so.

The time lapsing between my first and sixth birthdays was one of awe, wonder, delight, and mystery. Every birthday was marked with cake and candles. I had accepted each of these tributes with curiosity, admiration, and astonishment. I regarded every piece of the cake a valuable treasure—something to look at, not to devour. I often kept a piece of cake as long as three or four weeks after the annual celebration.

The period from six to twelve was the zenith of the birthday cake. The children of the whole neighborhood were usually there every year to enjoy my cake with me. Making wishes after blowing out all the candles was the main attraction of these celebrations. I spent a great deal of time seeing how far and how long I could blow. That was, of course, practicing for the coming event. At the age of seven years I first discovered that the cake was much more satisfying in my stomach than on the table. In fact, the cake as a decoration was denounced, and I adopted it as a very valuable delicacy.

When I attained the remarkable age of fourteen, I was quite grown up. The cake no longer occupied the main spot on my birthdays. That was a minor detail. It was childish, and I scoffed at the idea of still making wishes.

But when the day came for making the birthday cake, decorating it with fourteen little candles, I accepted it casually, made my wishes—my lungs had developed an overwhelmingly large amount of wind—and then devoured my piece of cake ravishingly.

Another part of a birthday celebration I have not yet mentioned. When my friends approached me on my birthday with their hands behind their backs, I just imagined the crude, wooden objects they held and ran for shelter. Whoever introduced the custom of "spanking" a birthday celebrator is often a sad victim of my reproaches. The custom is to hit as many times as the person is old and then give one for being good, one for being married, etc. The procedure is quite an unwelcome one.

My friend who had listened patiently to all my musings softly chuckled. My birthday is tomorrow, and I expect seventeen little candles on a big cake. Nonchalantly I shall make my wishes, nonchalantly eat the delicacy; but my birthday celebration will be complete.

DOROTHY LAPOLE, ENGLISH VIIC.

SUNRISE FROM PIKES PEAK

At two o'clock one cold, crisp Colorado morning a sharp knock sounded at the door of our cabin at the foot of the mountains. The bus driver had come to take me to see the sunrise from Pikes Peak, that famous mountain in the heart of Colorado. Tired and sleepy as any boy would be who had travelled through the mountains all day, I had a hard time getting my eyes open. At last, however, I managed to clamber out of bed and get into my clothes.

The excitement was great; I could almost hear my heart going thumpety, thump, thump as I stepped into the bus that was to take us up the mountain. I have always been noted for asking questions; and as we journeyed through Ute pass and up Little Pikes Peak to the toll gate, I feel sure that the driver believed that I had an inexhaustible supply of questions. They ranged all the way from "How far up is the tree line?" to "How long does it take to walk to the top of the mountain?" We could see very little on the way up as it was pitch dark, but I could see the clouds below looking like a great sea in a bad storm.

After a long assent we reached the top. It had snowed the day before and the ground was covered, and this was the middle of June. Shortly after we arrived at the summit a great red streak came across the eastern sky. This was followed by orange, yellow, purple, and the most gorgeous shades of violet. It was the most vivid coloring that I have ever seen painted by nature. It is impossible to describe; it would be hard for the best artist to do the scene justice with his paint brush. After the last color had faded away and day had fully dawned, a huge panorama was unfolded to the north, south, east, and west: towns, plains, mountains, and rivers spread out before us. Before we realized it, it was time to return to our cabin at the foot of the mountain.

WILLIAM G. MOORE, ENGLISH Ia.

HOT BAKED APPLES

I can think of nothing more delicious than browned, baked apples, colored red inside by cinnamon drops, surrounded by pools of sweet juice, and decorated with cloves. The cloves seem like eyes, winking at me from the jolly round face of the apple, inviting me to taste this tempting dish.

I like to think of the history of my favorite fruit. It is spring; the tiny buds of a delicate pink pop out on the bare branches, warm, balmy breezes float lazily everywhere; the fresh green of the grass and the flowers seem like a miracle produced by some fairy wand.

It is now summer, the apple blossoms are gone, and the fruit is hanging on the limbs of the tree, but this fruit is still small, green, and sour.

Soon autumn comes with snappy, frosty air which brings out the delicious flavor of the fruit. The apples are now just perfect: large and crimson and oozing with juice. Then before long they repose in a large bin amid the noise and din of the market place.

Now as I meditate upon the baked apple before me with its crest of snowy whipped cream, I think of my apple pictures; and I dream of the sweet country air, the open orchard, and the blue sky overhead; the odor of the warm earth, clover, and apple blossoms.

BETTY GARST, ENGLISH VA.

THOUGHTS OF A SUBSTITUTE

Fourteen to thirteen and we're at the foot,
Why doesn't the coach put me in?
I could win this game with one good boot,
Still fourteen to thirteen and we're at the foot;
O, why was I born a substitute?
There goes the whistle, that's the end.
Fourteen to thirteen and we're at the foot;
Why didn't the coach put me in?

PAUL SPELLMAN, ENGLISH IVA

MOONLIGHT

Pale moonlight gliding through the trees,
Tracing intricate designs on the soft grass.
Faded, mellow gold, sleepily drifting;
Stealthily yet lazily weaving its ghostly way
    Through the forest—
    Moonlight among the trees.

CLIFTON MELOY, ENGLISH VI.

THE MOON

The silvery moon in the blue velvet sky
Slowly climbs his nightly stairs,
He sees many things from his place on high,
The silvery moon in the blue velvet sky.
He watches the earth with his wise old eye
And laughs at its pleasures and cares;
The silvery moon in the blue velvet sky
As he slowly climbs his nightly stairs.

LOUISE VOLLRATH,
ENGLISH IVA.

FLOWERS

Why do they live?
What do they say?
Are they just here to be
Beautiful, dancing, and gay?

LOIS STRATMAN,
ENGLISH VIIC.

NATURE AT DAWN

I woke up in the morning
And heard a red-bird sing;
His sweet notes gushed from his throat
And made the whole house ring.

The morning breeze came drifting in
And made me feel so gay,
And rays of sun streamed cross my bed—
A perfect break of day.

I looked across the tree tops
And saw the sky so blue,
And on the fresh green grass I saw
Big drops of pearly dew.

I looked upon my window sill
And saw a robin there.
He'd had a fresh, cool morning bath;
Sat sunning with great care.

I felt so close to nature
In the quiet of my room,
And in my dreamy early thoughts
The alarm went off too soon.

I lay for one quiet moment more
To hear the red-bird sing so gay,
And rays of sun streamed cross my bed—
A perfect break of day.

EMMY LOU POSSON,
ENGLISH IVA.

OLD MOON

Old Moon, through curved lenses
You are gaunt,
Ragged, jagged, bare.
Your uninhabited peaks
Are cold and lifeless.
But still, Old Moon,
To dreaming lovers
Out beneath you
On a warm June night
You are the essence of tenderness.

KENNETH MAURER,
ENGLISH VIIC.

A WINTER EVENING

A winter evening—
Cold, bleak, cheerless;
A wind howls dismally.
Logs again heaped on greying embers
Once more push winter back.

JOHN SELLERS,
ENGLISH VI.

WINTER WIND

The cold wind swept the pasture bare,
Combed the leaves from Mother Earth's hair,
Froze the creek and made us know
Soon we should be seeing snow.
'Neath the leaves it put wild things to sleep
And thickened the fleece on the farmer's sheep
It warned each swallow close to stay
Within the barn 'til a warmer day.
It covered the woods, the lake, the hill,
As over the earth it cast a chill;
Upon the window it pinned a frill
And checked the progress of the mill.

BRYANT MILLIKAN,
ENGLISH VIIC.

GRAPHIC ARTS

(Continued from page 14)

In the Layout classes pupils learn printing terms, designing, and type measurements, and make layouts for printing or commercial art work. Prerequisites for Layout I and II are two semesters of Commercial Art or two semesters of Advanced Printing Design. Layout II, which is much more advanced, takes up the study of the layout of books and magazines, and cooperates with the Commercial Art classes. Pupils in these classes plan the layouts for "Siftings" and the Arsenal Cannon magazines, the programs and tickets for all school productions, and many other projects.

Commercial Art is a two-year vocational course. In the first two semesters Commercial Art is a two-period, one-credit subject. The second and last two semesters it is a four-period, two-credit subject. The Commercial Art course is open only to pupils who have successfully passed four semesters of two-period Art, or have had two semesters of Graphic Arts.

In the Commercial Art classes all phases of art work are intensely studied. After the pupils have had a good foundation on the fundamentals of Commercial Art, they are given practical work to do that is used in connection with school work. Commercial Art pupils make posters and letter signs, illustrate the Arsenal Cannon, and assist in school advertising classes. The first semesters are spent in becoming familiar with the tools of the commercial artist. In the last two semesters of the course very advanced commercial art work is developed.

Graphic Arts is a two-semester preparatory course which offers two credits. This course is taken by pupils who wish to take Commercial Art but do not care to take two years of Art. The study of Graphic Arts prepares the pupils for entering the Commercial Art course without the Fine Arts foundation. In these classes pupils are taught the rudiments of drawing and the use of commercial artists' tools. Usually these classes are held in the same room with Commercial Art classes. This enables the Graphic Arts pupils to learn more of the practical side of commercial art.

AUTO SHOP

(Continued from page 13)

are open to juniors and seniors who have met certain prerequisites. Classes are two periods in length for the junior year and four periods for the senior year. Four semesters of Ground Mechanics are also offered.

A grounded army airplane from Fort Harrison, given to the Ground Mechanics department by the United States Army, is very helpful and valuable in the operation of these classes. Pupils disassemble the plane, study the parts and their individual and combined functions, and then reassemble the plane. The plane serves for demonstrating to the boys the fundamental principles of airplane construction, repair, and operation.

In order to make the study more interesting and to cause the boys to apply the principles they have learned outside of their regular classes, and in order to aid in the development of increased interest and fuller knowledge in aviation, a Ground Mechanics Club has been formed.

Thus through these several sources of information, regular Ground Mechanics classes and the Tech Model Airplane Club, Tech pupils have an opportunity to learn more about the aviation industry and are sent out much better prepared for entering into aviation.

DRAFTING

(Continued from page 15)

The course in Machine Drafting is primarily to train boys to take jobs with industrial and manufacturing firms in this part of the country, specifically in Indianapolis. It also forms a good foundation course for any boy who plans to go to an engineering school.

A boy planning to become any one of the specialized drafting engineers starts in at Tech by taking Mechanical Drawing, a one-period course, for four semesters or two years. The next step is either Machine or Architectural Drafting I and II, whichever is his need, at which he spends two periods a day for two semesters, or one year. His last course is Machine or Architectural Drafting III and IV, a four-period course, at which he spends one year, this completing his four years of real training.

RAINY MONDAY

Monday morning—and rain at that.
He came in slicker and battered hat.
Perhaps his pants were at half-mast too,
And the shoes he wore were far from new.
On his face there flashed an anxious look.
His hello was gruff. With a glance he took
In the dreary scene that met his eyes
As he sloshed to class 'neath leaden skies.
Yet who can blame?—
Monday morning—and rain at that.

LOIS STRATMAN, ENGLISH VIIC.

PERSONALS . . .

WOULDN'T IT BE FUNNY IF—

Dorothy was dimes instead of Nichols.
Albert was a path instead of a Lane.
Betty Marie was a ten instead of a Twente.
Gilberta were cups instead of Boles.
Charles was a duck instead of a Swan.
Hazel was better instead of Wurster.
Mary was a sinker instead of a Hook.
Janice was a field instead of a Commons.
Millicent was a trapper instead of a Mouser.
Bert was pillows instead of Sheets.
Genevieve was a room instead of a Hall.
Betty was joints instead of Nuckles.
Mary was the stern instead of the Hull.
Virginia was a trumpet instead of a Drum.
Louise was a carpenter instead of a Plummer.
Roland was a tingle instead of a Dingle.
Harlan was a knitter instead of a Weaver.
Georgianna was a penny instead of a Schilling.
Edward was a cuff instead of a Coller.
Audrey Marie was an ant instead of a Roach.
Mary Ann was less instead of Moore.
Dorothy was a nail instead of a Hammer.
Harold was seen instead of Heard.
George was cinnamon instead of Ginger.

LOST, STRAYED, OR STOLEN

Lost, strayed, or stolen—a joke a day. Finders please return to Joan Schrader.

Wanted—a vocabulary as large as Richard Winton's. Fred Melcher—advertisee—Roll Room 5.

Found—One "Jenny Lee's" basketball. See Bob Berry for particulars.

Lost—Seniors who act as dignified as seniors usually do. In care of the Senior Class.

THEIR FAVORITE SAYINGS

Mary Jane Anderson—"Ka-razy"
Christine Schrader—"Aw, gee"
Elias Poulos—"Whacha' doin'?"
Junie Martinella—"Didya?"
Earl Vicars—"Good for you"

SPECIAL SERVICE—

Houses haunted free on the second Tuesday of each week.

For further information see—Edgar Kennedy.

Home from 8 to 3—fourth floor, Main Building.

HAWKIN'S HAWKEY SQUAWKS

John Hawkins went ahawkin' after hawks; but when the hawks saw John Hawkins ahawkin', the hawks flew off asquawkin'.

—CANNON, *1927.*

LOOKIE, LOOKIE, LOOKIE—C C C

First Stude: I hear that you are a member of the CCC.

Second Stude: Yeah, C in English, C in Math, and C in Language.

FRESHMAN'S WISH

I wish I could have:
The brain of Robert Daily
The brawn of Joe Edwards
The grin of Lawrence Peterson
The strength of Tommy Osborne
The eyes of Ted Steinkamp
The teeth of Ralph Waggener
The hair of Atha Bruns
The wit of Ira Lee
The voice of Hugh Cassidy.

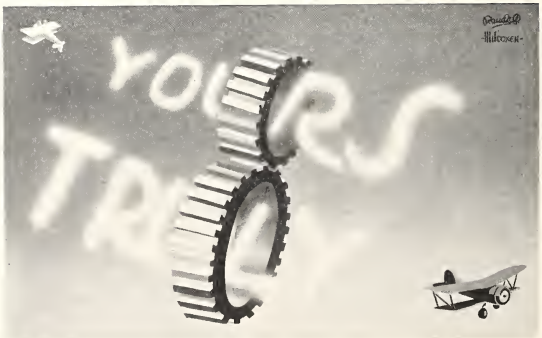
ALL WET—

Eugene Smalley: Did you know that water is made up of one-third oxygen?

Grant Elliott: Yeah, and the rest is all wet.

LAFF, LAFF, LAFF

Jenny Lee is quite the girl,
As for her hair, it's got the curl.
Harry Adkins, not so tall,
But the snap is there—they all fall.
Ralph Williams is quite the boy,
He's always bubbling over with joy.
Amos Childers, the tieless guy,
He always smiles and then says, "Hi!"
Bill Fisher, the kid with the smile
For a "good" joke he'd walk a mile (???).
Bill Neimel—call him Fifi—
Does he get angry?—do it and see.
Bob Millholland, quite a prof at trig—
Does he like dates? No—He'll take a fig.
Ray Cradick is on Make-up staff
Does he make up?—Don't make us laugh.
Bill Waters goes 'round with "Gus,"
Do they get along—don't ask us.
Jimmy Cox has got the wit
We wonder what he'll do with it.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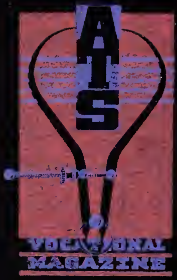
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